European Commission

DG Environment

Establishment of guidelines for the inspection of mining waste facilities, inventory and rehabilitation of abandoned facilities and review of the BREF document

No. 070307/2010/576108/ETU/C2

Annex 4

Comments on draft guidelines for the inspection of mining waste facilities

April 2012

Prepared by

DHI
in cooperation with
Cantab Consulting Ltd
University of Tartu
Mecsek-Öko
Miskolc University
and
VTT
Written comments received on draft 2 (September 2011) of the Inspection Guidelines after the Lisbon workshop

Comments were received from:

Austria
Ireland
Hungary (Gyozo Jordan and Ferenc Madai)
Portugal
Euromines
IMA Europe
Euracoal

Austrian comments were in the form of “stickers” on the pdf document, so they have been condensed and added as a separate document at the end. Gyozo Jordán sent a brief document with general comments which is included below and an annotated version of the guidance document – the latter is added as a separate document at the end.

Austria

See separate document at the end.

Ireland

COMMENTS AND OBSERVATIONS ON DRAFT (VERSION 2) GUIDANCE DOCUMENT ON INSPECTION OF MINING WASTE FACILITIES

Gerry Stanley (Geological Survey of Ireland), John O’Neill (Department of Environment, Community and Local Government) and Pól O’Séasnáín, (Environmental Protection Agency)

Some of the suggestions and comments stray outside the strict consideration of this report yet are critical to a proper implementation of inspections.

1. The main players should be labelled The Responsible Parties. These would normally be:
   a. The Owner or Operator. We prefer Operator. However, we need to make sure that an operator cannot walk away with the ultimate owner devoid of responsibility. The ultimate owner must have vicarious liability. This may be a question for the legal department. Operator is defined in the Directive but owner is not.
   b. The Competent Authority or Regulatory Authority. Competent Authority is the term used by the Directive and should be used.
   c. The Independent Inspector; the Independent Auditor; Expert; Competent Person, Qualified Person etc. The Directive defines Competent Person thus: ‘competent person’ means a natural person who has the technical knowledge and experience, as defined by the na-
tional law of the Member State in which the person operates, to perform the duties arising from this Directive’. However, it is clear that the usage of Competent Person refers to the employees of the operator. Therefore, a separate term is needed for the independent person – perhaps Independent Inspector might serve best. An Independent Inspector would have the relevant qualification and training and technical knowledge and experience and professional accreditation.

2. Monitoring of site may have to take place for very long periods of time. It will be important to use the right word(s) to describe this time. Words might include in perpetuity, forever, indefinitely. We prefer indefinitely as it does not mean forever. It simply mean for a period of time that is not definite. It may become definite at some (undefined) time in the future.

3. We think there should be guidelines on Draft Reports prepared by independent persons. Many reports are issued in draft form providing certain parties the opportunity (or right) to comment; to make observations; to make suggestions; or to ‘make corrections’ etc. It would be helpful if there were clear guidelines on what can be commented on and what should be corrected without calling into question the integrity and independence of the report. Also those who may make comments etc. should be identified, e.g., operator, authority, public (?). At all times it should be clear that the author of the report has the responsibility for the report, its findings and recommendations.

4. The issue of the length of time that post closure covers needs to be addressed.

5. Who pays? There is a clear implication in the report that the operator actually employs the ‘independent expert’. We disagree strongly with this approach. It will always be the case that such a person in the employ of operator will not be seen to be independent – ‘he who pays the piper calls the tune’.

6. The question of facility ownership should be addressed. Even ownership may not be the correct word in all instances. Notwithstanding this problem and using the word ownership it is clear in the operational phase that the operator is the owner. However, during closure and post closure the operator may or may not be the owner.

7. Into the future, following closure of the facility, a change of owner may take place. The question then arises regarding the ownership of monitoring, maintenance and dealing with any matters arising from the malfunction of the facility. Who owns the problem? The licensee will ultimately still take on all the responsibilities and liabilities. The licensee should not change without the Competent Authority’s approval. However, there may still be issues with ‘subcontracting’ the problem.

8. With respect to future land uses the question arises as to whether any restrictions on the use of the facility should be placed into the deeds of the facility. This is further complicated for the case of facilities that are closed or abandoned and whether restrictions on their use can be inserted into deeds without a change of ownership.

9. There appears to be confusion to which phases the ‘independent engineer’ makes input to the project – planning, feasibility, design, permitting, operational, closure and aftercare. The question also arises as to whether the same ‘independent engineer’ carries out the work at each stage. There is a strong argument that different ‘independent engineers’ should be contracted at the different stages.

10. For facilities that are being planned or will be planned in the future it should be a recommendation that a closure scenario(s) should be considered at the planning and design phase of the project. The closure objective should be stated. However, there should be sufficient flexibility in the system to allow for advancements in technology and practice to allow for more effective and possibly economical solutions to be considered when the time comes to close the facility. The latter should obviously only be considered if the solution proposed is at least as good as the original proposal.
11. There appears to be a concentration on the structural integrity and insufficient thought given to the geochemical stability of the facility. In some cases these are differences of acute versus chronic failures. In some cases there is a direct link between structural failure and environmental issues.

12. ‘Good’ and ‘best’ practice appears to be used interchangeably in the document. We think for these facilities we should be recommending best practice.

13. There should be a facility for updating the permit in the light of scientific or technological advances or varying conditions in the operation or at the site.

14. Silt lagoons (from sand and gravel operations) do not appear to have been addressed in the document. This should be rectified.

15. Suggest that include a Definitions Section in the report.

16. Suggest that there is a Recommendations Section in the report.

17. The major issues that could go wrong should be listed – structural failure, ARD and metal solubility, etc. (See later).

18. There were lots of tables presented in the report often covering the same topic but it wasn’t clear which one the authors were recommending. We would prefer to see other peoples work referred to in the text but only use tables where this is the recommendation of the report. This will help avoid confusion.

19. Whatever it is decided to call the Responsible Parties the same terms should be used throughout the document. Suggest that language be consistent throughout, e.g. use one only of expert, independent expert, independent auditor, external inspector, qualified person or the one we prefer Independent Inspector.

20. Be careful in the use of biennial (every two years) and biannual (twice a year).

21. We think is it important that the actual closure phase (implementation of and construction related to the closure) of the facility be inspected – the report does not appear to address this.

22. There should be automatic and immediate reporting of exceedances or other notifiable events.

23. There should be annual reports to the Competent Authorities. The report contents should be specified and should include operational matters, monitoring results, plans for following year, and closure plans or changes.


25. What about paste tailings disposal – not normally flooded?

26. What about the marine deposition of tailings – the Norwegians are still keen on this?

27. Figure 1, page 2. We don’t agree with the inspection objectives as listed. The Competent Authority also has as an objective the safety of the facility.

28. Bullet lists in 2.2, top page 7 – these relate largely to physical stability and there is no reference to chemical stability.

29. Table 2, page 7 – there is too great a difference in the frequency of visual inspections (daily versus half yearly).

30. Section 2.3.1 Page 8 – a plan for inspections for the territory should be compiled once a year.

31. Section 2.3.2, page 8 – shouldn’t all environmental information be made available to the public according to the DIRECTIVE 2003/4/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 28 January 2003 on public access to environmental information (Environmental Information Directive)?

32. Figure 3, page 9 - indicates that the Inspecting Engineer should carry out an annual inspection while Table 2 says that the Independent Audit should take place biannually, i.e., twice a year.
This illustrates three problems: (i) the terms used should be consistent – i.e., are Inspecting Engineer and Independent Audit the same; (ii) should the frequency be the same; and (iii) the use of different information sources with different recommendations will lead to confusion.

33. Section 2.5, page 10 – should the following two directives also be included:
   b. DIRECTIVE 2004/35/CE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage. See also below for other suggestions.

34. Section 2.5 page 10 – perhaps the following recommendation should also be included: RECOMMENDATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 April 2001 providing for minimum criteria for environmental inspections in the Member States. See also below for other suggestions.

35. Page 12 – are points d) and i) one and the same?

36. Top Page 13 – the 10,000m³. Is this freeboard or the total facility?

37. Page 13 – suggest that the piece on Recommendation 2001/331/EC should be a separate section.

38. Section 3.2.1, page 13 – what do you mean by an independent expert to ‘oversee all aspects of waste management on the site’. We think this would be most unusual. An employee would ‘oversee all aspects of waste management on the site’.

39. Section 3.2.3, page 14 – should hydrogeological be include in the list (lines 3 & 4)?

40. Section 4, page 16 – ‘Experience in a number of well-regulated jurisdictions …’ – give examples of these jurisdictions.

41. Section 4.1, page 17, - it might be possible to borrow some jargon from management, e.g., KPI – Key Performance Indicator.

42. Section 4.2, page 17 – this is an example of where the consultant should be making a recommendation. If not then it’s hardly worth mentioning it.

43. Tables 6 & 7, page 18 – refer to Category A facilities and not just tailings management facilities or waste rock dumps.

44. Tables 6 & 7, page 18 – explain EWD does it mean ‘Extractive Waste Directive’ (although this is a term that is not used much)? The Statutory appointment is not necessary in every Member State. Replace ‘expertise’ with ‘experience’. Delete ‘basic’ in ‘basic understanding of ARD’.

45. Section 4.4, pages 18 and 19 – a subsection on closure is needed here.

46. Section 4.6, pages 19 and 20 – you also need to report on whether the facility is working or operating as designed.

47. Section 4.6, pages 19 and 20 – there should be check list of observations to be made – not just compliance with numbers in a permit. For example, vegetation die back on embankments, cracks, bulging, slips erosion etc. The frequency at which these observations are made should also be discussed and recommended.

48. Figure 4a, page 20 – need to label all elements.

49. Figure 5a, page 21 – need to label all elements.

50. Figure 6a, page 22 – need to label all elements.

51. Figure 6b, page 22 – need dust monitoring.

52. Section 4.6, following page 22 – need to have similar diagrams for silt lagoons used in sand and gravel pits.
53. Section 4.7, page 23 – if the report contains environmental information then it should be available to the public as per the Environmental Information Directive. The Competent Authority will also want to see it. Should ‘page 21’ read ‘page 24’?

54. Section 4.8, page 23 – subsections in Section 4.8: these appear to be getting mixed up somewhat. Either have the subsections as ‘Urgent and Non-urgent’ OR ‘Safety, Performance and Environmental’.

55. Section 4.8.1, page 23 – what if the operator can justify not implementing the recommendations in the timeframe suggested or not at all? This is another reason why the report should be copied in full to the competent authority, if not indeed, carried out on behalf of the competent authority.

56. Need a Section 4.8.3 Environment.

57. Table 8, page 24 – use a single designation for the independent person. May not be a statutory appointment (we prefer Independent Inspector). ‘Competent Authority’ not ‘Enforcement Authority’. Under 6 should include an ‘environmental manager’. Under 9.5 should have information on the foundations and the topography of the site and downstream. After 9.5 there should be another line ‘Follow up on recommendations/conclusions of previous inspection’. In our experience of looking at such reports, there is an inherent weakness here due to human nature - when the same person reviews their own work or the work of their paymaster they will not be as critical as a third party. Suggest that Independent Inspector should change at least every 5 years. Under 15.3 this should read ‘Recommendations in the interest of the performance’. There should be a 15.4 ‘Recommendation in the interests of the environment’. In some case there may be a need for a 15.5 ‘Recommendations for the closure plan and after care’. There should also be a section dealing with exceedances or breaches of the permit – outlining the breach or exceedance and the measures taken to rectify the matter(s).

58. Section 5, page 25 – we think the different phases (design, construction, operation, Closure and post closure) of the facility need to be addressed separately in this Section, as the requirements are quite different.

59. Table 10, page 28 – this table might also include: date/time; inspector name; mode of transport (walking or vehicle); sightings of wildlife; vegetation condition; evidence of dust blow; any special requests of management; photographs. There should also be the facility to record some basic parameters such as pH, conductivity, temperature, flows of input and decant streams.

60. Section 6, page 31 – we don’t like the overall heading. On reading the section it appears to be addressing pre-deposition, closure, post closure and abandoned facilities. If so, then this section should be incorporated as subsections into Section 5.

61. Section 6.2, page 32 – we found this a bit woolly. Some of the statements we do not believe represent actual practice in at least some Member States such as: “The design details of the facility, together with the waste management plan and including the initial version of the O&M Manual, will be prepared and submitted during the permitting stage.” and “This obligation will almost certainly require an undertaking that the construction be overseen and Certified by the same independent expert.” Also the operator should produce the Closure Report. It should be approved by the Competent Authority (with the assistance of an independent expert). What is ‘passive closure period’? If this is to be used to mean something specific it should be defined in the definitions section. Are there other types of closure period?

62. Section 6.4, page 32 – we don’t think this should be ‘dependent on the location of the site within the EU’ but rather it should be ‘dependent upon the risk posed by the facility’. It could be argued that all such sites will require monitoring indefinitely.

63. We think there should be a section in between current Sections 6.4 and 6.5 with subsequent re-numbering. This section would cover abandoned sites as stated in Section 6.1.
64. References. These should be in alphabetical order. Any references which are not readily publicly available should not be included and should be removed both from the list of references and from the text. For example, the last entry - these are probably not available and reference to them is unhelpful.

65. The Appendices may not be complete at this stage and do need further work. The situation for sub-aerial deposition does not appear to be covered, for example. Silt lagoons (as for sand and gravel operations) are not covered.

66. We would prefer to reorganise the material presented into ten chapters as follows:

Chapter 1 – Objectives of the Guidance (including Terms of Reference)
Chapter 2 – Relevant Directives, Decisions and Communications.
Chapter 3 – Definitions
Chapter 4 – An Inspection Regime
Chapter 5 – Objectives of Inspection (Why)
Chapter 6 – Facilities to be Inspected (What)
Chapter 7 – The Responsible Parties (Who)
Chapter 8 – Location of facilities to be Inspected (Where)
Chapter 9 – When should the Facility be Inspected (When)
Chapter 10 – Guidance on what needs to be Inspected (How)

There should be comprehensive set of Appendices including all Sample Record Forms.

The following pages provide further suggestions for the proposed guidance contents. The words in parentheses in the headings need not be included but are inserted here to assist in explained the rational for the proposed layout.

**OBJECTIVES OF THE GUIDANCE**

**TERMS OF REFERENCE**

The legislative background should be given stating the actual article under which this guidance is being provided.

This Chapter should also be an introduction to the report including the objectives, what the report is; what the report is not; the terms of reference; a guide to the layout of the report and information on how to use the guidance.

There should also be a section stating what can go wrong – structural failure, ARD, metal solubilities etc.

**Hungary (Gyozo Jordan)**

(see also separate document)
Dear Ole,

As promised, I am sending you attached my comments on the two Guidance docs: INSPECTION and CLOSURE. I am also sending the annotated reviewed Inspection document. Since the closure doc is a preliminary draft, I added less comments.

Great job, both, congratulations!

If you need further assistance, feel free to contact me.

Best wishes,
Gyozo

c. Michel Sponar, Nils Eriksson

Comments and suggestions

for the

Guidance document on inspection of mining waste facilities

DRAFT
(version 2)

Contract No. 070307/2010/576108/ETU/C2

14 September 2011

Gyozo Jordan

September 2011

GENERAL COMMENTS

1. This document is an excellent effort and provides a solid basis for further development.

2. The Guidance document should be much more pragmatic, user-oriented, and useful indeed for the potential user (inspector, authority personnel). It shall work as a cook book, providing recepies, step-by-step ‘GUIDANCE’ for the daily use by the user/reader. E.g. add more real checklists, reference to legislation, etc.

3. The Guidance document should be much more strongly linked to the words of the Mine Waste Directive (MWD). Instead of a general guidance, a detailed and specific tool shall be provided that enables the daily implementation of the MWD. Analyse the words of the Directive and provide direct implementation/application guidance.
4. **Risk assessment is not considered**, although (1) it is requirement of MWD (and all new EU environmental legislation), (2) it could provide a natural and pragmatic structure for the Guidance. At least, the SOURCE-PATHWAY-RECEPTOR paradigm shall be considered. Put inspection in an RA frame, perhaps.

5. According to this guidance, there is **too much responsibility on a single person**, the inspector. This is too much burden on an individual and might be used as a ‘scape goat’ in case of accident. Besides, a single person can be influenced too easily by any of the actors, questioning the much advocated ‘independence’ of the inspection. A shared responsibility among the operator, authority and the inspector shall be established.

6. Find more link to other EU directives that the operator, the inspector and especially the authority have to consider in their daily practice.

**SPECIFIC COMMENTS**

1. Consider a wide international review of methods, such as US EPA procedures.

2. Consider that most companies have ISO management tools (ISO 9001-2000) that ensures stringent documentation of changes in technology, etc.

3. Consider that planning phase assessment is environmental impact assessment (EIA) with an EU Directive established.

4. Be more specific about the (key/indicator) parameters that the inspection shall regard.

5. 1-5-10 year regular inspection makes sense. However, inspection should be adjusted to any CHANGE that occurs in the facility (source) and surroundings (pathway, receptors), on a RA basis (source-pathway-receptor).

6. Please find more comments in the annotated Guidance document attached.

**Hungary (Ferenc Madai)**

Dear Ole,

One comment to the second draft of the inspection guideline. Tables 6 and 7 (page 18) summarise the minimum qualification requirements of the independent expert. Why is it so strictly fixed to civil engineering qualification? It can exclude geotechnical or mining- and geotechnical engineers or make it difficult for them to get this title, however they are at least so qualified in rock mechanics and geotechnics than civil engineers. Moreover they will have enhanced expertise in mining, mineralogy, weathering processes etc. Like in Hungary, probably in other countries also the geotechnical divisions of Chamber of Engineers (or similar associations) are governed by civil engineers. This is hard to get the qualification with a mining and geotechnical engineering degree in Hungary. It is acceptable for general civil engineering projects, but in our case geotechnical engineers or mining/geotechnical engineers should have the same chance compared to civil engineers.

Kind regards
Portugal

This are the Portuguese suggestions about the Guidance document on inspection of mining waste facilities with the contribution of the companies.

Portugal agrees in general with the Guidance document. However it should be regarded as an orientation to member states;

In page 7 - table 2 the frequency of the independent audit in the operational phase should be annual.

In page 7 – table 3 the frequency of the independent geotechnical audit in the operational phase should be annual.

These independent audits must be done by independent experts with the operator supporting the costs. The results must be send to the competent national authority. In Portugal, with the licensing process of a Category A facility, the operator has to deliver to the competent authority, a signed report by an independent company that confirms that all infra-structures built are in accordance with geotechnical and hydraulic safety regulations.

Page 11 Framework for inspections by the competent authority

In Portugal there are two different types of inspections, either from the competent authority or from the environmental authority.

The guidance document now in discussion suggests that inspection reports prepared by the competent authority after the inspection activities should be very complex and be public. In Portugal this is a simple report and it’s available for public access when requested to the competent authority.

Page 9, Figure 3: What should be given from the Owner/operator to Inspecting Engineer is an Annual Report, which includes the Annual data, as is mentioned in figure 7 on page 26.

Page 18, tables 6 and 7 Minimum qualifications and competences: we agree with a minimum years' experience and proven expertise but the minimum should be the same for both facilities. It is also our opinion that the qualification cannot be restrict to a civil engineer. A mining engineer, a geotechnical engineer, an geological engineer, also have competences to do the inspections, considering they have, as the civil engineer, the other qualifications (design and construction experience, proven expertise and minimum experience).

Page 26, Figure 7: It is our opinion that the annual report prepared by the operator/owner should be given directly to the Competent Authority and to the Independent Inspection, and not as it is proposed in the referred figure.

Page 28, table 10: Waste rock dumps - The second sentence should be written as "daily tones of waste produced and deposited or removed from the dump"

Appendixes 2, 3 and 4: Based in experience and in the routines in practice in Neves Corvo mine is our opinion:
a) Daily inspections are very important and should be done but the parameters' list to be observed and recorded in a daily basis, described in the appendix n°2, is very extensive, which contributes to progressively ceases to be registered (ex: it is not possible to record in a daily basis the maximum height of a stockpile).

b) The sheets presented in the appendix 3 are obsolete. All the measurements are made automatically or using equipment which allow the discharge of information directly to a laptop and the results are treated digitally. There are no reasons to have the proposed instrumentation sheets, except for the locally piezometers' readings, but a much simple one (see example attached)

c)
We attach some documents (sorry but they are in Portuguese) in use at Somincor.
Best regards

Luis Morais
Dear Michel, Ole and Mike,
please find attached our collated comments on the 2nd draft document related to Inspections.

One additional procedural point that concerns us is as follows;
- the EWD TAC has the mandate to produce the Guidance referred to in Article 22 and indeed industry is not represented on the TAC
- any other "supporting guidance" that is not called for under Article 22 would normally lie outside of the TAC's mandate and would normally require consultation of industry

Therefore, if much of the text produced so far is to be used in "supporting guidance", it should not be adopted by the TAC in isolation, but together with industry stakeholders.

With Best Regards,
Johannes
Euromines
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Date: 28 September 2011

Document: Draft Guidance document on inspection of mining waste facilities

14 September 2011

14
### Draft Guidance document on inspection of mining waste facilities

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<td>Whole document</td>
<td>Throughout</td>
<td>Any references to “waste expert” should be changed to “extractive waste expert”.</td>
<td>Ensure all references to waste experts mention specifically “extractive waste experts”</td>
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<td>Whole document</td>
<td>Throughout</td>
<td>We do not understand the motivation for insisting that Recommendation 2001/331/EC or the IMPEL reports should now be considered binding for mine waste facilities.</td>
<td>In consultation with stakeholders, take what is relevant from Recommendation 2001/331/EC and include those considered appropriate and applicable to extractive waste facilities in supporting Guidance (non-binding). Re-phrase IMPEL’s “minimum requirements” to “IMPEL recommendations”.</td>
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<td>Include only supportive, non-binding, guidance and thoroughly consult stakeholders before finalising.</td>
<td>Refer any proposals for binding requirements to possible drafting of a Commission Decision for separate consideration by all stakeholders, including the Technical Adaptation Committee.</td>
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<td>Whole document</td>
<td>Throughout</td>
<td>All Guidance supporting any proposed Commission Decision should be non-binding and subject to thorough stakeholder consultation.</td>
<td>Delete all occurrences of the phrases “minimum criteria” and “minimum standards”.</td>
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<td>Change to,…</td>
<td>“The objective of the inspection process as appropriate for extractive waste facilities is to ensure safety, stability and compliance with the Extractive Waste Directive”.</td>
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<td>“The inspection process covers all stages of the extractive waste facility through design, construction, operation and post-closure….”</td>
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<td>2nd and 3rd paragraphs</td>
<td>“Regime” is a difficult term to understand on first reading. Competence of the inspector should depend on the level of inspection (not the other way around). Inspections could be focussed on the waste facility. This Guidance should not include prescriptions for operator-level inspections, which are not the subject of EWD Article 17.</td>
<td>“…and fully compliant with both design and environmental parameters throughout construction, operation and post-closure. The competence level of the inspecting personnel and the extent of their remit will therefore depend on the level of inspection required. At operator level, the objectives are likely to be highly site-specific within the context of the safe and efficient management of the process, and the inspection might be part of a broad framework of individual inspect-</td>
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Date: 28 September 2011

**Draft Guidance document on inspection of mining waste facilities**

14 September 2011

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<td>1.2</td>
<td>4th paragraph</td>
<td>Any proposed Commission Decision should not include prescriptions for operator-level inspections, which are not the subject of EWD Article 17. All Guidance supporting any proposed Commission Decision should be non-binding and subject to thorough stakeholder consultation.</td>
<td>&quot;Inspections undertaken by the regulatory authorities at regional or national level tend to be less technical in content but in the majority of instances they comprise an audit of the above inspection routines to ensure that the operation is fully compliant not only in terms of safety and stability but also in its performance and application of <strong>any mandatory</strong> inspection and monitoring routines. Further, it ensures that issues of concern identified and remedial actions recommended by the competent person inspecting are undertaken in an appropriately timely manner.&quot;</td>
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<td>&quot;Controlled installation&quot; is a difficult term to understand on first reading. We do not believe that EU Law allows for &quot;revocation&quot; of valid permits. &quot;Suspension&quot; of a permit until minimum countermeasures are implemented is much more likely.</td>
<td>&quot;<strong>Specifically for a controlled installation,</strong> Environmental inspections, as defined by the recommendation on minimum criteria for such inspections, 2001/331/European Council, entail: - checking and promoting the compliance of “controlled installations” (in this case any extractive waste facility authorized under the MWD (2006/21/European Council)) with relevant environmental requirements set out in Community legislation (in this case Directive 2006/21/European Council <strong>in particular</strong>) as transposed into national legislation or applied in the national legal order,&quot;</td>
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<td>All</td>
<td>The case that Recommendation 2001/331/European Council and IMPEL (1999) are “useful” for the purposes of the EWD is not convincing. They are too general. Point II para 1 lit a of Recommendation 2001/331/European Council clearly states that it is proposed “without prejudice to specific inspection provisions in existing Community legislation”. The requirement that the EWD Guidelines be sector-specific and fit-for-purpose is far more important than any preference to be consistent with these older documents. We agree that the MonTec proposal was too broad (not focussed enough on dam &amp; heap safety), un-manageable and disproportionate.</td>
<td>Reduce and re-write as context, as an example, or at the end of the project as an ex-post comparison of the resulting EWD Guidelines against the general recommendations of these older documents. If necessary, they could later be modified to be consistent with the requirements of the EWD Guidelines.</td>
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<td>1.3</td>
<td>Last bullet</td>
<td></td>
<td>Delete “biodiversity, air quality”</td>
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<tr>
<td>2.1</td>
<td>Tables</td>
<td>Any proposed Commission Decision should not include prescriptions for operator-level inspections, which are not the subject of EWD Article 17. The frequency and the extent of the inspections should not be regulated by regular intervals for certain types of installations, but depend on the risk of each individual installation. Furthermore also Art 17 states that the intervals of the inspections have to be set by the member state concerned.</td>
<td>For both tables, maintain explicit link to BAT recommendations (i.e., non-binding on M States).</td>
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<tr>
<td>2.1.2</td>
<td>2nd paragraph Last sentence</td>
<td>Change “all information” to “the information”</td>
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<tr>
<td>2.1.2</td>
<td>Last paragraph</td>
<td>It is not the purpose of a BREF to be either “comprehen-</td>
<td>Delete penultimate sentence.</td>
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<tr>
<td>graph</td>
<td>sive” or “fully up-to-date”. BREFs are a set of examples that are used to describe BAT.</td>
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<td>2.1.3 Last sentence</td>
<td>The exemption referred to was a deliberate element of the negotiation of the text of the Directive by the three EU Institutions – not an oversight. The draft needs to remain within the legal requirements of the EWD and should therefore not treat the question whether the regulations of the EWD are sufficient.</td>
<td>Delete.</td>
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<tr>
<td>2.2 Tables 2 &amp; 3</td>
<td>Tables 2 and 3 refer to the &quot;recommended&quot; frequencies of inspections as foreseen in the BAT concerning the inspections of tailings management facilities and waste-rock facilities. In fact in the BAT the frequencies of inspections are just listed as examples, not as recommendations. Therefore the headliners of tables 2 and 3 should be in line with the BAT and should say &quot;proposals&quot; instead of &quot;recommendations&quot;.</td>
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<tr>
<td>2.2 Penultimate paragraph</td>
<td>Please change to → “Further, the BREF indicates that the results of both operating and independent inspection should be made available for inspection by the competent authority…”</td>
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<tr>
<td>2.2 Last paragraph</td>
<td>There is no requirement for extractive waste facilities to comply with 2001/331/EC, because it is superseded by more specific legislation for those facilities.</td>
<td>Delete the last sentence.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3 Title</td>
<td>This section describes non-binding Recommendations that have since been superseded by the Extractive Waste Directive</td>
<td>Change title to something less prescriptive.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3 Page 8, 1st paragraph</td>
<td>We disagree that Recommendations 2001/331/EC are applicable and question whether any Member State has applied them to the mining sector. The Recommendations were adopted in 2001, without consultation of the mining industry, and refer to EC legal requirements in place at that time. The EWD was adopted in 2006 and specifically addresses requirements for extractive waste facilities with no reference whatsoever to 2001/331/EC. The Guidelines called for in Article 22 of the EWD should be made fit-for-purpose and should, if necessary, trigger</td>
<td>Delete the last sentence.</td>
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<td>Clause No./Subclause No./Annex (e.g. 3.1)</td>
<td>Paragraph/Figure/Table/Note (e.g. Table 1)</td>
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<td>subsequent modification of the 2001 Recommendations for consistency.</td>
<td>Change to “The decision (2001/331/EC) recommends that the plan and objectives for environmental inspections […] should be established,…….”</td>
<td></td>
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<tr>
<td>2.3.1</td>
<td>2nd paragraph</td>
<td>There is no requirement for extractive waste facilities to comply with 2001/331/EC, because it is superseded by more specific legislation for those facilities. The first sentence of this paragraph is factually incorrect.</td>
<td>“and the reports should be made available on request if the conditions laid down in Directive 90/313/EEC are fulfilled”.</td>
<td></td>
</tr>
<tr>
<td>2.3.2</td>
<td>1st paragraph</td>
<td>Directive 90/313/EEC only requires that inspection reports be made available on request subject to certain conditions. The guidance should therefore not state any general obligation to release the results of inspections to the public.</td>
<td>This chapter should be deleted</td>
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<tr>
<td>2.4</td>
<td>All</td>
<td>- the first mentioned Directive 2008/1/EC doesn’t apply to mining waste facilities - the Seveso-II Directive and the Directive 2000/60/EC don’t regulate inspections of mining waste facilities but the prevention of accidents and the protection of water</td>
<td></td>
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<tr>
<td>2.6</td>
<td>Page 11</td>
<td>Jumbled text. It is misleading as it gives the impression that the MWD stipulates a tiered inspection regime, whereas it only regulates the inspection by the authority.</td>
<td>Delete this chapter. At least such “explanations” relating to the operator’s and independent expert’s inspections mustn’t be part of the legislative background.</td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>1st bullet list</td>
<td>The EWD clearly explains which sites must be covered by the inspections. Non-routine environmental inspections should not be standardised too much, as this will defeat their purpose. Inspections for the purposes of granting permits should not be included in the scope of these guidelines – only inspections related to proper implementation once permits have been granted.</td>
<td>Delete points (d) and (f) from the list</td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Page 12, last paragraph</td>
<td>There is no requirement for extractive waste facilities to comply with 2001/331/EC, because it is superseded by more specific legislation for those facilities. Some of the text in this paragraph is factually incorrect.</td>
<td>Delete “for extractive waste facilities” from the sentence describing examples given in IMPEL 2008.</td>
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<td>Response on each comment submitted</td>
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<td>3.1</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; bullet list page13</td>
<td>Determination as to whether and on what terms to issue a first authorisation, permit or licence is a separate task of the Competent Authority not to be included in the scope of these Guidelines as required by the EWD. Such determinations require a different set of skills to that of an environmental inspector and should be dealt with separately.</td>
<td>Delete: “as part of the determination as to whether and on what terms to issue a first authorisation, permit or licence for a process or activity at a controlled installation or the proposed site thereof or”</td>
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<tr>
<td>3.1</td>
<td>Page 13 Last paragraph</td>
<td>The inspections should be truly risk-based and no limits should be set</td>
<td></td>
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<tr>
<td>3.2</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; paragraph</td>
<td>The first paragraph needs to be fundamentally reworded as it contains several wrong statements such as: - It is “the normal practice that independent experts are engaged to oversee all aspects of waste management on the site” - “the inspections would have to cover the range and date outlined in chapter 4 and 5” - “It is unlikely for the authority to undertake the detailed inspections necessary so that it would need to threaten or instigate immediate withdrawal of the permit.”</td>
<td>It is doubtful whether such a general statement is valid regarding the practice in all EU member states. The general statement that the authorities are not capable to carry out the inspections is not acceptable and must in any case be deleted. Finally any reference – regarding the range of inspections - to the chapters 4 and 5 should be deleted.</td>
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</tr>
<tr>
<td>3.2.1</td>
<td>Whole subsection</td>
<td>This text is not 100% correct and does not appear to serve any useful purpose.</td>
<td>Delete 3.2.1</td>
<td></td>
</tr>
<tr>
<td>3.2.2</td>
<td>Opening phrase</td>
<td>We note that this is the first mention of the requirements of Article 17 of the EWD, which should be the starting point for the whole document.</td>
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<tr>
<td>3.2.2</td>
<td>Table 5</td>
<td>The inspections should be truly risk-based and no limits should be set</td>
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<tr>
<td>3.2.5</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; paragraph</td>
<td>Directive 90/313/EEC only requires that inspection reports be made available on request subject to certain conditions. The guidance should therefore not state any general obligation to release the results of inspections to the public.</td>
<td>“these reports should be made available on request if the conditions laid down in Directive 90/313/EEC are fulfilled”.</td>
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</table>
It should be clarified that the engagement of independent experts is not prescribed by EWD Art.17, but rather recommended by the BAT Document and that the competent authority is empowered to decide on whether to engage them or not. However, Any proposed Commission Decision should not include prescriptions for operator-level inspections, which are not the subject of EWD Article 17.

Sections 4.1-4.8 should be transferred to supporting non-legally-binding guidance. The remaining text should actually be included under Chapter 3, because it all relates to inspections for which the Competent Authority is responsible. Change the first paragraph as follows:

"Experience in a number of well-regulated jurisdictions has shown that engaging suitably qualified independent professionals to undertake inspections and to report on them to the relevant bodies can be of value,…”

Insert the following text:

“The competent authorities are responsible for the inspections of the waste facilities. This means that in general inspections are carried out by the authorities themselves. Nevertheless - under certain conditions - it can be reasonable for authorities to engage independent professionals to carry out the inspections. No obligation to engage such experts is laid down in the EWD; it is therefore up to the authority to decide on whether to do so or not.”

No such text should appear in the Commission Decision or supporting non-legally-binding guidance. Delete the sentence.

Should be transferred, as an example only, to supporting non-legally-binding guidance.

"The independent inspecting engineer fulfils roles during commissioning, operation and post-closure. During commissioning and operation, the purpose of the regular inspection by the independent expert is to ensure that the facility is safe and stage, both geotechnically,…”.
<table>
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<tr>
<th>Clause No./Subclause No./Annex (e.g. 3.1)</th>
<th>Paragraph/Figure/Table/Note (e.g. Table 1)</th>
<th>Comment (justification for change)</th>
<th>Proposed change</th>
<th>Response on each comment submitted</th>
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<tr>
<td>4.4</td>
<td>Last paragraph</td>
<td>This text is overly prescriptive, extending beyond the requirements of Article 17 of the EWD, and most likely not practical to implement. The aim of the inspections is to ensure that the waste facility complies with the relevant conditions of the permit laid down in article 7. Therefore the guidance should not refer to the permitting procedure and the possible role of an independent expert in the permitting procedure. Change to →</td>
<td>Replace “in perpetuity” with “for many years”. Delete the last sentence of the paragraph. No such text should appear in the Commission Decision. Any remaining text should be transferred to supporting non-legally-binding guidance and subject to thorough stakeholder consultation.</td>
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</tr>
<tr>
<td>4.7</td>
<td>Page 23, 1st paragraph</td>
<td>The inspections should be truly risk-based and no limits should be set</td>
<td></td>
<td></td>
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<tr>
<td>4.7</td>
<td>Page 23, 1st paragraph</td>
<td>Directive 90/313/EEC only requires that inspection reports be made available on request subject to certain conditions. The guidance should therefore not state any general obligation to release the results of inspections to the public.</td>
<td>summaries should only be made available on request if the conditions laid down in Directive 90/313/EEC are fulfilled.</td>
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<tr>
<td>5</td>
<td>All</td>
<td>Any proposed Commission Decision should not include prescriptions for operator-level inspections, which are not the subject of EWD Article 17.</td>
<td>Keep: - 1st paragraph of 5.1 - last paragraph of 5.1 with the following changes: “In many jurisdictions the extent,...” “However, under all national legislation,...” - 1st paragraph 5.2 Figure 7 should be clearly labelled as an example only. The rest should be transferred to supporting, non-legally-binding guidance.</td>
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<tr>
<td>6</td>
<td>Table 12</td>
<td>The Guidelines should focus on extractive wastes as defined by the Directive.</td>
<td>Delete 2nd Column of the table.</td>
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<td><strong>Clause No./ Subclause No./ Annex (e.g. 3.1)</strong></td>
<td><strong>Paragraph/ Figure/Table/Note (e.g. Table 1)</strong></td>
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<td><strong>Proposed change</strong></td>
<td><strong>Response on each comment submitted</strong></td>
</tr>
<tr>
<td>6.3</td>
<td>First two sentences</td>
<td>Closure planning starts already at exploration stage. Change to →</td>
<td>&quot;During the period immediately preceding cessation of mineral extraction operations and the implementation of the closure plan, the O&amp;M Manual will have undergone modification to reflect the changing operating parameters. The target will be for the facility to achieve the design pre-closure stage, by which time all deposition will have ceased and the closure actions have been initiated.&quot;</td>
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<tr>
<td>6.4</td>
<td>Whole text</td>
<td>Post closure monitoring will in some cases be undertaken by the Competent Authority. Handover of the facility to the competent authority, or future owner, can take place by agreement with the Competent Authority. Change to →</td>
<td>&quot;On completion of the closure works there would be a further period of monitoring, with site visits undertaken by the independent expert at, typically, every five to ten years dependent upon the location of the site within the EU. The facility would continue to receive inspection and monitoring [...] and, from time-to-time, by the independent inspector until the site is considered to be geotechnically and geochemically stable and no longer represent a risk to life and the environment. At this stage it is anticipated that the final series of inspections and Certification would be prepared [...]&quot;</td>
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<td>Appendix 3</td>
<td>All</td>
<td>Any proposed Commission Decision should not include prescriptions for operator-level inspections, which are not the subject of EWD Article 17. All Guidance supporting any proposed Commission Decision should be non-binding.</td>
<td>Delete Appendix 2.</td>
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IMA-Europe Comments

on the draft Guidelines on Inspections of Mining Waste Facilities (of 14 September 2011) and the review of the Mining Waste BREF

1. Guidance document on inspection of mining waste facilities

IMA-Europe very much welcomes the preparation of a guidance document that shall establish guiding principles for undertaking inspections and we thank the consortium for all the work done so far.

We furthermore appreciate the fact that the documents recognise the importance of adopting a risk based approach - although not consistently throughout all the document - and setting the permit as reference against which an inspection is to be carried out - although, here again, there is no consistency throughout the document. We also support the tired approach proposed for inspection.

We would however like to propose a few amendments to the September draft that we believe will enable the document to better reflect the specificities of the extractive sector.

1.1. General comments

• Scope

We advocate for having the guidance document only covering Cat A waste facilities, thus, following Art. 7 of the Mining Waste Directive, and being in line with the risk based approach which we believe the document should follow. We furthermore recommend the scope of the Guidance document to be clearly specified in the introductory chapter.

As part of the introduction, we would like to introduce a subsection that summarises the specificities of the extractive sector with a focus on the wide varieties of waste disposal scenarios, such as:
- Disposal context
- Types of waste generated (from inert to hazardous)
- Volume: the typical quantity of waste deposited in a tailing pond for the Industrial Minerals sector is in the magnitude of tens of thousands of m per year and the increase of water/sediment level of a magnitude of decimeters per year.
- Size: quarries/open pits typical surface vary from a few ha to about 200 ha.

This information would allow the reader to clearly understand the difficulties in drawing a “one fit all” inspection plan, and that it needs to be developed on a case by case basis.

• Recommendations vs. requirements

As discussed during the Workshop in Lisbon, IMA-Europe strongly recommends that the Guidance document remains faithful to its purpose, which is to provide guidance and recommendations and not requirements. The wording of the full text needs therefore to be carefully reviewed in order to properly mirror this aspect.

In the same way, there should also be a consistency throughout the document in the need to refer to the permit requirements when undertaking the inspection, and not the BATs.

• Risk based approach

As mentioned during the workshop, IMA-Europe thinks that the inspection guidelines should follow a risk based approach; looking at the source, pathway and receptor on equal basis should be considered when setting the type and frequency of inspections. Therefore, we believe that the guidance should look into providing recommendations on the type of risk analysis that should be undertaken (as well as its content) on which an inspection plan shall be based.

• Avoid Checklists based on inspection frequencies of identified parameters

While we understand that having checklists would facilitate the work of inspectors, we strongly oppose including in the guidance document a list of parameters that need to be inspected along with the associated inspection frequencies. Indeed, risk scenarios, even when set per type of sector or
extractive activity, vary - sometimes significantly - from one site to another and even within a same sector.

1.2. Specific comments

- Section 2.2 - page 7

It is unclear whether the tables in this section are considered recommendations or whether they have been included to indicate what currently lies in the BREF? To avoid any confusion about their use, we believe that the tables should be removed, especially when they are taken out of their context (e.g. on page 400 of the BREF, it is explained that “the frequency of the monitoring depends on the consequence of the failure”).

- Section 2.3

When reading the section 2.3, it is assumed that the minimum criteria set in the recommendation 2001/331/EC are minimum requirements. The legal status of an EP and Council recommendation should be checked and the wording (and title) of the section should be adapted accordingly.

- Section 3.2.1

“Where no such inspection practices are in evidence the competent authority would have either to implement the full range of inspections and data recording as outlined in chapter 4 and 5 themselves, or to have recourse to legal action. As it is unlikely, or be impractical, for the authority to undertake the detailed inspections required due to the resources required, they would almost certainly need to threaten or to instigate immediate withdrawal of the operating permit for such a facility until the necessary corrective measures had been taken by the operator.”

Is there a legal basis for such statements?

- Section 4.4 page 19

“During operation, the purpose of the regular inspection by the independent expert is to ensure that the facility is safe and stable, both geotechnically and geochemically, and that it is fully compliant not only with the permit but also being operated in accordance with good practice.”

We believe that the guidance document should be consistent with the idea that the permit requirements are the basis against which an inspection is to be carried out. We therefore oppose to statements such as the one highlighted above.

- Section 5.1 - page 25

“The expectation and opinion of the public will determine the acceptability of the development of new mineral extraction operations as well as the permitting of ongoing operations.”

We strongly disagree with this statement. Whilst the public is consulted and its opinion taken into consideration, it is the Competent Authority that decides on the acceptability of the development of a new extraction operation.

- Sections 5.2.2 and 5.2.3 - Tables 10 and 11

It is extremely important to place these tables into context and to clarify within the text and in their title that these checklists are not typical for all waste facilities and that these are just examples.

- Section 5.2.3 - page 30

“Data such as piezometric levels or seepage volumes should be recorded, verified and plotted on a continuous basis such that trends can be established.”
This recommendation is appropriate provided that the scope is limited to waste disposal facilities Cat.A. Should the scope of the guidance include all types of waste disposal facilities (we do not support this approach, then, such measurements are not necessary in all circumstances. Piezometric measurements are costly and should be carried out only when necessary and not on a regular basis.

- Section 6.1 - Table 12

The guidance should clearly mention that the impacts listed in table 12 are not applicable to all waste facilities.

**Euracoal**

**EURACOAL Position Paper on Guidance Document on Inspection of Mining Waste Facilities**

The European Association for Coal and Lignite - EURACOAL - is the umbrella organisation of the European coal and lignite industry. EURACOAL evolved in 2002 from the European Solid Fuels’ Association - CECSO - after the expiry of the ECSC Treaty establishing the European Coal and Steel Community. EURACOAL is composed of 35 members from 20 countries, amongst which national producers and importers’ associations, companies and research institutes from Belgium, Bosnia-Herzegovina, Bulgaria, the Czech Republic, France, Germany, Greece, Hungary, Poland, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Turkey, the Ukraine and the United Kingdom. EURACOAL is well informed on the activities of DG Environment to establish Guidelines for the inspection of mining waste facilities as well as to review of the reference document on the best available techniques. EURACOAL participated in the stakeholder consultation held on 30 June 2011 dealing with these issues.

1. **Guidance Document on Inspection of Mining Waste Facilities**

**General Remarks:**

It was explained that “the main objective of the study is to support the Commission in implementing the specific aspects of Directive 2006/2 1/EC on the management of waste from extractive industries (the “Mining Waste Directive” or the MWD) by providing the necessary technical information in order to prepare the technical guidance document on inspection as required under Article 22 (d) of the Directive.

It was pointed out that Guidance on Inspections only applies to Mining Waste Facilities as defined in Article 3(15) and covered by Article 7. Article 2(3) of the MWD and specifically excludes Article 7 for inert waste and unpolluted soil for quarries.

EURACOAL emphasizes again that this legal basis has to serve as a rule for the Inspection Guidelines. As the scope of the draft goes far beyond that legal scope EURACOAL stipulates a clear distinction between legal and guiding aspects. It has to be clarified that the additional contents in the document are only for informal purposes to help operators and/or authorities when they need help. But in principal the guideline should be of benefit for authorities and not for operators. At least in the guidance document there must be a clear identification of voluntary issues and issues which are legally binding and are regulated in a decision. EURACOAL calls upon the Commission to develop such a decision.

Brussels, 10 October 2011
Austrian comments

"waste facility, there is an appropriate transfer of relevant up-to-date information and records relating to the waste facility."

Article 17 indicates that the operator must keep up-to-date records of all waste management operations and make them available for inspections by the competent authority. Furthermore, in the event of a change in operator during the management of a waste facility, a proper transfer of up-to-date information and records relating to the facility has to be guaranteed. However, the information to be included in the “records” is not defined, though it is implicit that this should include all information relevant to the management of the facility.

Article 17 indicates that inspections apply to all extractive waste facilities authorised under the MWD (2006/21/EC). However, it is accepted good practice that where any risk is posed to operators, third parties or to the environment generally, many of the principles which apply to Article 17 facilities may also be applicable to sites not complying with the MWD criteria, albeit at a lower level of intensity.

In addition, Article 4 states that the facility be managed at all stages using best available technologies (BAT) and provides the general requirements with reference to best available techniques for management of tailings and waste-rock in mining activities (BREF EU, 2009). However, though the general provisions of the BREF are referenced in this guidance it is generally recognised that reference document is neither comprehensive nor fully up-to-date. It is therefore suggested that the following report should take precedence in all aspects related to the inspection of mine waste facilities.

2.1.3 Exemptions

Article 2 (3) states that “Inert waste and polluted soil resulting from the prospecting, extraction, treatment and storage of mineral resources and the working of quarries and waste resulting from the extraction, treatment and storage of peat shall not be subject to Articles 7, 8, 11(1) and (3), 12, 13(6), 14 and 16, unless deposited in a Category A facility.” Since Article 17 refers only to facilities covered by Article 7, this means that facilities containing exclusively inert waste and/or polluted soil from the above activities may not require inspection as stipulated in Article 17, unless they are classified as Category A facilities. While the definition of inert waste is described in Commission Decision 2009/359/EC (see Section 2.2), the definition of polluted soil is in effect regulated individually by the Member States. The criteria for classification of waste facilities as Category A or not Category A are given in Commission Decision 2009/337/EC (see Section 2.2). In this context the assessment of the consequences of failure due to loss of structural integrity as stipulated in Articles 1 through 7 in Commission Decision 2009/337/EC will be of particular importance with respect to the classification of facilities containing only inert waste and polluted soil and hence the requirement for inspection. Since some degree of inspection will be required for any waste facility, it could be questioned whether this exemption is deliberate or was overlooked when the MWD was drafted and approved.

2.2 The BREF

The Reference document on best available techniques for management of tailings and waste rock in mining activities (BREF, EU, 2009) indicates that BAT, with respect to inspections, auditing and reviews, includes the following recommendations which are not restricted to Category A facilities:

Tailings ponds/tailings dams:

Draft September 2011
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<th>Number</th>
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<th>Subject</th>
<th>Date</th>
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<td>2011-10-12 11:10:23 +02'00'</td>
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<tr>
<td>4</td>
<td>holnstei</td>
<td>Notiz</td>
<td>2011-10-12 11:11:10 +02'00'</td>
</tr>
</tbody>
</table>

- unpolluted soil

- unpolluted soil

- unpolluted soil

- unpolluted soil
The minimum criteria shall apply to all installations, enterprises and facilities (defined as “controlled installation”) whose emissions or waste disposal/recovery are subject to permitting under Community legislation. Thus, as extractive waste facilities are subject to permitting under the MWD (2006/21/EC), the minimum criteria laid down in these recommendations are deemed apply to the inspection of extractive waste facilities.

These recommendations also provide the definitions of “controlled installation”, together with guidance on the type of inspections (“routine” and “non-routine”), the “inspecting authorities” and the operator (“operator of the controlled facility”), as well as on the “activities” to be included. It is clearly the intent of the recommendations that these definitions should apply in all respects to inspections of extractive waste facilities.

2.3.1 General Inspection Planning

The recommendations (2001/331/EC) state that inspections should be planned in advance and that a plan for inspections within the territory of the Member State and for the controlled installations within it should be publicly available at all times. Such a plan or plans may be established at national, regional or local levels, but Member States should ensure that the plan or plans apply to all environmental inspections of controlled installations within their territory and that the inspecting authorities are designated to carry out such inspections.

The decision (2001/331/EC) recommends that the plan and objectives for all inspections of extractive waste facilities should be established in advance of operation and be available not only to the Operator of the controlled installations but also to the Competent Authority within the territory of the Member State. Such plans may be established either by the Member States’ own competent authority at national, regional or local levels, or by the operator to an agreed framework. However, regardless of the author, the member state should ensure that they are applicable to the inspection of all controlled installations within its territory and that the appropriate responsible inspecting authorities are fully identified.

2.3.2 Site-specific Inspection Planning

The recommendations also give guidance on the coordination of site visits between different inspecting authorities, on reporting of site visits and on the inspector’s legal right to access to the site and to information for the purpose of the inspection (see Figure 3). It also recommends that inspection reports produced by the Competent Authority be made available to the operator, and the synoptic reports be made publicly available no later than two months after the date of the inspection.

Non-routine inspections may also be required in response to complaints, in connection with the issuing, renewal or modification of an authorisation, permit or license, or in the investigation of accidents, incidents and occurrences of non-compliance. The recommendations outline the purpose of such non-routine inspections which are intended to ensure that any deficiencies in the structures or waste management are corrected.

Finally, the recommendations indicate the importance of the interchange of experience between Member States (assisted by IMPEL) regarding inspections, stating that Member States should assist each other in administrative issues and where appropriate regarding exchange of inspecting officials.
practically not performable due to structures of Authorities

Dir. 90/313/EEC only comprises environmental information of individuals ob demand. Nevertheless publically available reports would create more confidence (concerned neighbours, communities etc.)
the MWD. In decision 2009/358/EC, Members States are requested to give information regarding:

- The inspecting authority (in the list of permits issued under the MWD as defined in Annex I of 2009/358/EC).
- The inspecting authority of a facility that has reported an incident has to be reported according to articles 11(3), 12(6) and 18(2) of the MWD and Annex II of 2009/358/EC.
- The inspecting authority and numerous questions on how inspections have been planned, performed, reported and followed-up in the MS in the questionnaire outlined in Annex III of 2009/358/EC.

None of the other decisions explicitly address inspections. However, as part of the inspections, it should be confirmed that applicable parts of the decisions are considered in the waste management plan.

2.5 Other Directives (additional explanation may be added)

Other directives that will, or may, have an influence on the conditions for inspection of mining waste facilities, or from which experience may be gained, include:


2.6 Legislative context

The significant body of reference material and legislation relating to the design, operation and closure of extractive waste facilities provides excellent background information to this report. However, the Recommendations such as 2001/331/EC reference the overriding legal framework for inspections by the competent authority and do not address the specific technical nature of inspections which are the focus of these guidelines. It must therefore be emphasised that the timetable and the particular recommendation referenced in this Recommendation for example relate, by inference, only to the high level compliance inspections undertaken by the competent authority and could not apply to those technical inspections undertaken by the operator or by the appointed (independent) expert due to the programme implications. The clear inference from this is that inspections of mine waste facilities need to be tiered, with the results from each being used to compile the compliance audit as shown in Figure 3. It is noted that the inspections undertaken by the operator are reviewed and summarised during the inspection by the external independent inspection and that a further synopsis is submitted to the competent authority to confirm compliance. The volume of data collected, and the extent of interpretation and analyses, would generally
to which term refers the bracket term?

The matter of radioactivity is out of the scope of MWD; toxicity of radioactive mine waste has to be considered
preclude the detailed external audit results from being available to the authorities within the specified two-month period. This timetable therefore must relate to the issue to the Competent Authority of the inspection report following the independent external audit within two months of its finalisation and signature. It must be emphasised that this is wholly consistent with the intent of the Directive, i.e. ensuring that the operator is fully compliant with the conditions of his permit and is performing all necessary inspections and operation in accordance with good practice. Examples of the timetables for these various levels of inspection are also shown in Table 4 for example.

Table 4: Example of inspection and reporting frequency for Category A facilities

<table>
<thead>
<tr>
<th>Level</th>
<th>Inspection Frequency</th>
<th>Reporting period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operator</td>
<td>Daily/weekly/monthly</td>
<td>Month-end summary reports prepared for internal management review</td>
</tr>
<tr>
<td>Mine management</td>
<td>Monthly/three monthly</td>
<td>Monthly/three monthly review with an annual synopsis of all monitoring data completed in advanced of visit by external inspector</td>
</tr>
<tr>
<td>External inspector</td>
<td>Annual/biennial</td>
<td>Inspection report based on visit and on review of annual monitoring data report completed within three months of inspection date.</td>
</tr>
<tr>
<td>Competent Authority</td>
<td>Annual/biennial</td>
<td>Compliance report based on external inspection report and completed within two months of its completion.</td>
</tr>
</tbody>
</table>

3 FRAMEWORK FOR INSPECTIONS BY THE COMPETENT AUTHORITY

Member States plan and carry out environmental inspections of all industrial installations and other enterprises and facilities whose air emissions, water discharges, waste disposal or recovery activities are subject to authorisation, permit or licensing requirements under Community law. The MWD requires the Competent Authority to undertake regular inspection of all extractive waste facilities permitted under the MWD. However, given the complexity of the waste facilities covered by this Directive and the wide range of skills and expertise likely to be required in order to fulfil the legislative requirements, it is anticipated that in most cases Regulators will be unlikely to retain such expertise in-house. Further, it is evident from existing national legislation that detailed technical inspection by the Regulator is unlikely to be the most efficient or cost-effective method of complying with the Directive. It is therefore necessary to provide Regulators with a framework which ensures that the requirements are being met in order that the facility is fully compliant and that neither the regulator nor industry are overburdened. This will enable the Competent Authority to comply with the requirements of the MWD without imposing a technical load for which they may not have the finances, staff or resources.

This Section sets out the scope and guidance for Regulators to ensure regulatory compliance and the enforcement of any corrective works or remedial measures identified to be necessary.

3.1 General inspection plan

The recommendations (2001/331/EC) state that inspections should be planned in advance and that a document detailing both the programme and scope for inspections and the controlled installations within the territory of the Member State should be publicly available. Such plan or plans would ideally be established as part of territorial permitting and would be expected to follow national guidelines. Of importance is that it is encumbent on the Member States to
there is no legal necessity to set up a general inspection plan
practices are in evidence the competent authority would have either to implement the full range of inspections and data recording as outlined in chapter 4 and 5 themselves, or to have recourse to legal action. As it is unlikely, or be impractical, for the authority to undertake the detailed inspections required due to the resources required, they would almost certainly need to threaten or to instigate immediate withdrawal of the operating permit for such a facility until the necessary corrective measures had been taken by the operator.

3.2.2 Scope and frequency of inspections by the Competent Authority

According to Article 17 of the MWD, inspections should, prior to the commencement of deposit operations and at regular intervals thereafter, including the post-closure phase, ensure that all facilities covered by Article 7 comply with the relevant conditions of the permit. Compliance with this Article shall in no way reduce the responsibility of the operator under the conditions of the permit. This means that all extractive waste facilities permitted under the MWD are included in the scope. These facilities are to be inspected throughout their life cycle to ensure that they are built, operated and closed in a safe and environmentally correct manner according to the permit and relevant legislation. The purpose of an inspection by the authority would generally not involve the detailed technical assessment of the facility, which would be expected to be covered by the independent external expert. However, the inspection by the authority would be dependent on the findings and recommendations of the expert inspection report, which should be made available in advance to the authority inspection team.

The table below shows the current frequency of inspections across the EU as obtained from the questionnaire issued for the purpose of this report. To be completed on receipt of completed questionnaires.

Table 5: Existing EC practice for inspection frequency for mine waste facilities

3.2.3 Pre-inspection procedures

As for all technical studies, success is highly dependent on preparation undertaken in advance of the inspection. Accordingly, it is important that the authority inspector be provided with all relevant information concerning the site setting (social, topographical, environmental, hydrological and seismological, amongst others) as well as the extractive operations associated with the mine waste facility and the basic description, design history and current operation of the facility itself. The degree of preparation for an inspection depends on the type of inspection and the size, scale, type and complexity of the facility. However, for the compliance inspection the majority of relevant background data will be derived from the permitting documentation and from the most recent expert or independent audit reports. The latter should provide, in sufficient detail for the purposes of assessing compliance, a summary of the key facets of the operation, including the important geotechnical, geochemical and environmental monitoring results. Further, notification of changes to the design, operation or management plan, and of any investigations, untoward events or complaints, should also be made available, either through the statutory body responsible or the independent inspection report. Studying the above will provide suitable background information to enable a satisfactory understanding of the entire operation, the specific activities and the production processes on the site to be inspected.

Prior to any site visit it is essential that a carefully planned scope for the inspection be prepared in order to ensure that a decision on compliance and on the adequacy of existing site procedures can be made, and any perceived corrective actions identified. The basic purpose of the plan is to provide the inspector or inspection team with a step-by-step guide to
control of compliance with legal obligations and operation according to the rules, check if further measures for a proper operation of the facility are necessary

permitting documents + monitoring protocols
inspection and any recommendations. This meeting should be fully minuted and agreed by all attendees.

3.2.5 Post-inspection activities
Minimum requirements following site visits are given in 2001/331/EC. This indicates that, after every site visit, the inspecting authority process or store, in suitable data files, the inspection data and the authority’s findings in a form compliant with EC legal requirements. These findings should include an evaluation of the inspection, and conclusions as to whether any further action or follow-up inspections are required, or whether enforcement proceedings, sanctions or modifications to the permit are necessary. The resulting reports should be finalised as soon as possible.

In addition, the minimum requirements state that such reports are properly recorded in writing and maintained in a readily accessible database. The full reports or, where appropriate, the conclusions of such reports, should be communicated to the operator of the controlled installation in question in accordance with Directive 90/313/EEC. The reports should be publicly available within two months of the inspection having taken place. Where there is the risk of cross-border impacts, the Competent Authorities of the bordering country should also receive the report.

The format of the inspection report should follow a clear outline regarding the specific information and the structure of the report (i.e. introduction, activities, attachments, etc) should be simple and standardised. It is not envisaged that such reports would be highly technical or lengthy. However they should include the following:

- scope of the inspection, outlining its purpose and any specific reasons (e.g. complaints from third parties, incidents etc);
- list of the documentation reviewed for the inspection;
- brief description of the inspection visit, including full details and role of all participants, i.e. the independent expert and the operator’s personnel;
- summary of particular actions taken during the inspection visit with their chronology, such as physical sampling, details of additional evidence or observations made during the inspection;
- findings of the inspection, including competence of available documents provided by the operator, results of any sampling and findings of interviews with site operators and management;
- conclusions, recommendations and corrective measures.

It is further considered appropriate that the report should include the agreed minutes of the final inspection round-up meeting.

4 INDEPENDENT INSPECTION REGIME (this chapter may be somewhat reorganised)

Experience in a number of well-regulated jurisdictions has shown the value of engaging suitably qualified independent professionals to undertake inspections and to report on them to the relevant bodies. The independent expert fulfils the central function of regulatory
no legal obligation, but confidence creating
compliance and corporate assurance, and thus provides to the Regulator the key
documentation to ensure the compliance of a particular facility. This section explores in
detail the role of the independent inspecting engineer and provides guidelines for minimum
qualifications, outlines of the inspecting role, reporting and the interaction between
recommendations and enforcement.

4.1 Scope
The inspection process requires parameters against which the performance of the facility can
be judged. For an operating mine waste facility these are derived from the design and the
permit and, in the case of an abandoned facility, would need to be derived retrospectively by
risk assessment, investigation and back analysis.

A facility must be operated and maintained during its operating life in accordance with design
rules. The design of the facility should cover all stages of project development, i.e.
construction, operation and closure, and should include an integrated strategy for the
engineering and environmental monitoring of the facility to ensure full compliance with
design assumptions, environmental requirements and mitigation measures. Design is thus
based on an agreed set of parameters and a set of operating rules which must be followed if
the structure is to remain fit for purpose. An operator thus requires instrumentation,
monitoring and inspection routines throughout the operating life and post closure to ensure
that all structures remain within design and operating parameters. It is recognised that failure
to inspect and monitor may result in the safety of the structure being put at risk, with the
increased probability of death or injury to owners, users, operators and third-parties, and to
negative environmental impact. As part of the integrated design of the facility, a waste
management plan and an operating manual, which may be an expanded version of the former,
are required and form the background against which the inspection routines are carried out,
thus defining their scope.

4.2 Statutory appointments
In some Member States, the role and responsibilities of the inspecting engineer are defined by
statute and his qualifications approved by a statutory body. However, in most this is not the
case and thus operators and competent bodies will need to rely on guidance with regard to
competence and suitability of the inspector employed to undertake such an important role. It
may be that the EC will eventually establish an approving authority to ensure that all facilities
covered by the MWD are inspected by a person of suitable experience and competence.

4.3 Qualifications and competence
It is important that a facility be inspected by an engineer with the relevant qualifications and
experience. The person engaged should be able to commend good practice and to identify
poor procedures and potentially serious defects so that they may be corrected and a failure
prevented. It is recognised that the range of skills and technical expertise required for such an
inspection is significant, and thus it is unlikely that a practitioner with less than ten years’
experience will have the necessary skills to undertaken the role. Guidance for the minimum
qualifications for the inspection of both tailings management facilities and waste rock dumps
is shown in Tables 6 and 7.
delete last sentence of para 4.2 because there is no legal background
Table 6: Minimum recommended qualifications for the independent inspection of a tailings management facility

The generally recognised qualifications that make for competence for independent inspection of a Category A TMF, as underwritten by the EWD, are listed below:

- Suitable engineering degree;
- Professional qualification – in the UK e.g. FICE (Fellowship of the Institution of Civil Engineers), requiring a minimum period of practical experience in industry and peer review;
- Design and construction experience of all facets of dam engineering;
- Statutory appointment as a suitably qualified civil engineer,
- Proven expertise (minimum 10 years) of inspections of TMFs;
- Minimum 15 years’ experience of engineering and environmental aspects of mining projects, and specific knowledge of the geotechnical characteristics and behaviour of a range of mine wastes, i.e. coarse rock to fine tailings, including a basic understanding of ARD;
- It is important to note that the list deliberately requires practical industrial experience and that competence on the grounds of academic ability alone is insufficient and implies full harmonisation of qualifications across the EU.

Table 7: Minimum recommended qualifications for the independent inspection of a waste rock facility

The generally recognised qualifications that make for competence for independent inspection of a Category A waste rock dump, as underwritten by the EWD, are listed below:

- Suitable engineering degree;
- Professional qualification – requiring a minimum period of practical experience in industry and peer review;
- Design and construction experience of all facets of geotechnical structures;
- Statutory appointment as a suitably qualified civil engineer,
- Proven expertise (minimum 5 years) of inspections of dumps;
- Minimum 10 years’ experience of mining projects, and specific knowledge of the geotechnical characteristics and behaviour of a range of mine wastes, i.e. coarse rock to fine tailings, including a basic understanding of ARD;
- It is important to note that the list deliberately requires practical industrial experience and that competence on the grounds of academic ability alone is insufficient.

4.4 Role of the independent inspecting engineer/expert

The independent inspecting engineer fulfils roles during design and permitting, operation and post closure. A review of the design process at permitting will enable an independent consideration of the engineering and environmental mitigating procedures proposed, and identify shortfalls in the design or long-term expectations for the facility. The engineer may advise the operator or permitting authority that modifications in the design or operational parameters are required in order to meet environmental requirements or to comply with good practice. It will then be for the Competent Authority to ensure that such recommendations are incorporated into the permit conditions.

During operation, the purpose of the regular inspection by the independent expert is to ensure that the facility is safe and stable, both geotechnically and geochemically, and that it is fully...
are requirements of table 6+7 in line with European legislation?

Minimum req. is certificate on professional qualification such as statutory appointed civil engineers;
in Austria qualification requirements of "responsible persons in the mining sector" are legally regulated by an ordinance (recently amended by BGBl. II 304/2011)
delete table 6 and 7
compliant not only with the permit but also being operated in accordance with good practice. The independent expert may therefore identify areas where the operation is non-compliant and, in addition, where there are concerns that an untoward event might occur unless modifications to the facility are implemented. The inspector should make such recommendation in his report and ensure that there is a timetable for corrective action. In addition the independent expert should regularly review key design parameters in the light of increased knowledge of the site.

It is also the role of the independent expert to regularly review key design parameters such as hydrology, seismology or slope stability, particularly in the light of knowledge gained during the construction of the facility and the ongoing deposition of waste. In particular hydrological re-assessments and the design of the various waterways for the extreme event should be regularly reviewed, not just for water retaining facilities and spillway/decant designs, but also for stream diversions and run off control structures. The report should include the conclusions of such analyses and any recommendations arising, together with a timetable for corrective works where appropriate.

Post closure the frequency of such inspections may be reduced, but the intent and scope will not be affected. In some instances, inspections may be required in perpetuity due to the long-terms risks posed. However, in the majority of cases it will be the role of the inspecting engineer to ensure that the structures are compliant with the closure plan and that no untoward events are identified. Finally, it will be the role of the independent expert to prepare the sign-off report stating that the facility is then safe and stable and that it no longer poses an unacceptable risk to life or to the environment.

4.5 Extent and frequency of inspections

The extent and frequency of the inspections will initially be defined by the permit and, in particular, by the risk categorisation previously discussed. An example of the likely frequency of inspections of Category A facilities is shown in Table 4 (Section 2.4). It is likely that in some jurisdictions a similar frequency of inspection regimes will apply to Non-Category A facilities in cases where the risks posed require a higher level of observation and control. Non-Category A TM facilities where a significant volume of water is stored above ground level may come into this category.

However, it may be necessary to undertake updated risk assessments of extractive waste facilities to ensure that any new or previously unidentified risk is addressed by existing procedures. The independent expert should therefore review the risks posed at each inspection and recommend changes to their frequency where the risks or the structural conditions of the facility indicate the need.

4.6 Site inspection

The site inspection visit may require a significant input from the independent expert, who will be expected to review all site data and to personally inspect all relevant facets of the facility. It is recommended that the waste management plan and the site operating manual be used to provide background to these inspections, and that the performance of the facility be compared with these parameters to enable compliance with design and permitting objectives to be assessed. To this end it is recommended that the operator prepare in advance a synopsis of all relevant inspection and monitoring data and instrumentation records, and provides this to the independent expert during the inspection. Where necessary, additional data or sampling may be sought during the inspection for confirmatory purposes. Figure 4a shows a typical design
Authority inspections frequency to be decided by the member state!!!!!! We do not want this to be regulated!
Frequency and extent of inspections should depend on the possible risks of a facility.
4.7 Reporting
The preparation of the report will involve significant data review and analysis and, from time-to-time, may involve stability assessments and hydrological reviews. The report should include in summary the appraisal of all the information obtained and should identify any shortfalls, whether in inspection regime, operations or sampling deficiency. It is not anticipated that, where inspections are undertaken annually, stability or hydrological re-assessments will be required, but the independent expert should ensure that these are undertaken, at minimum, at five- or ten-yearly intervals, dependent on the risk. Clear and concise conclusions and recommendations should be prepared for inclusion in the report. The report should be issued to the operator in draft for comment to ensure that there are no inconsistencies or misinterpretation of data. However, it is considered unlikely that such a review of the draft would lead to modification to the conclusions or recommendations. The final report should be issued within six months of the date of the site visit and should include an executive summary for issue to the Competent Authority and for publication. It is NOT considered appropriate for the full report to be published.

An example of the contents of a report by the Independent Expert/Inspecting Engineer for a tailings management facility is shown in Table 8 on page 21.

4.8 Recommendations in the interests of safety
The most important outcome of such inspections are the findings summarised in the conclusions and recommendations and, in particular, any measures which are identified as to be taken by the operator in the interests of safety. Recommendations for modifications to any aspect of the management, operation or inspection and monitoring of the facility should be identified in the report conclusions as being either in the interests of improving operational efficiency or in the interests of safety. It is therefore anticipated that the inspector will provide the following as part of these recommendations:

4.8.1 Recommendations in the interests of improving operational/environmental performance
These will be recommendations relating to non-urgent aspects of the operation or management of the facility. The inspector should include a general guidance timetable for the implementation of these measures, which should be defined to suit the operator’s programme and resources but be in accordance with good practice. However, recommendations should in general be satisfactorily completed prior to the next expert inspection.

4.8.2 Recommendations in the interests of safety
These will be recommendations concerning issues relating to safety, stability or environmental performance which require to be addressed with a degree of urgency. It is essential that such issues be discussed directly with the operator and that the independent expert engineer provides a strict timetable for completion of such works. The independent expert should also indicate the key stages of the works at which a further inspection of the specific elements of the facility are to be inspected by a suitably qualified engineer (independent expert). All such works would need to be Certified as having been satisfactorily completed, and the independent expert would then need to undertake a follow-up inspection to ensure that the facility were then fully compliant. Where such works are required, the Competent Authority would need to be advised of their extent, the reasons for their execution and the timetable. It is anticipated that the Authority would track the works to ensure that they were completed within the specified time frame. Further, the Authority should receive a copy of the Certification prepared following the satisfactory completion of the measures.
there is no legal demand to fix reporting periods; this is up to agreements in permits; by the way: six month is too long; 3 month are acceptable
Comments by Gyozo Jordán, Hungary

1 INTRODUCTION
1.1 Commission brief

The European Commission, DG Environment, has retained DHI and its co-operation partners, Cantab Consulting Ltd, the University of Tartu, Mecsek-Óko, Miskolc University and VTT, to undertake the study “Establishment of guidelines for the inspection of the mining waste facilities, inventory and rehabilitation of the abandoned facilities and review of the reference document on the best available techniques.”

The main objective of the study is to support the Commission in implementing the specific aspects of Directive 2006/21/EC on the management of waste from extractive industries (the “Mining Waste Directive” or the MWD) by:

- providing the necessary technical information in order to prepare the technical guidance document on inspection as required under Article 22 (d) of the Directive;
- reviewing the methodologies relating to the rehabilitation of closed and abandoned facilities in order to develop a supporting document for the Member States;
- reviewing the BREF document on mining waste and assessing the opportunity to launch a revision or update of the BREF.

This document, meant for discussion at the workshop in Lisbon on 21st September 2011, presents a second draft of a guideline intended to provide a framework for inspections for all mine waste sites across the EU and to facilitate compliance with the MWD. The intention of the document is not to be prescriptive but rather to provide general principles for inspection and monitoring of waste facilities which enable compliance with good practice from which site-specific regimes can be developed. The overriding concern is to ensure safety, stability and environmental compliance without overburdening either the regulator or the operator. The document provides, in particular, recommendation for the minimum requirements for those structures which pose a significant risk and supports the Member States in ensuring that the inspection strategies and plans for all types of mining waste facilities comply with good practice and fully accord with Article 22 of the MWD. It should be borne in mind that, without appropriate levels of inspection by competent persons and the implementation of recommendations, the risks of failure and of danger to life and the environment are increased.

1.2 Inspection Objectives

The objective of the inspection process as appropriate for extractive waste facilities is to ensure safety, stability and environmental compliance. Further through a system of ongoing monitoring and quality control, to ensure that any untoward signs which may lead to failure or to an uncontrolled discharge are identified and corrected before an untoward event occurs. The inspection process covers all stages of the extractive waste facility through inception, feasibility, permitting, design, construction, operation and closure and, all levels, from the local operator to the corporate and from local authority inspector to the national body. As each extractive waste facility will be unique, the objectives, though meeting an overall framework, will need to be tailored to suit the parameters of each individual site. Thus on a complex mine site with a range of extractive waste facilities, though there will need to be an overall guidance document indicating the specific inspection requirements for that site, each individual facility will require minor variations in specific objectives and requirements. However, underlying the overall inspection process is the need for a consistent
approach as exemplified in Section 5.2 (Operating and Maintenance Manuals) and for appropriate levels of competence for each level of inspection.

The principal objective of any inspection regime is the assurance that the facility is performing and being operated within the design parameters established at the concept and implementation phases. In the case of an extractive waste facility, therefore, the objective is to confirm that the facility remains safe, stable, and fully compliant with both design and environmental parameters throughout design, construction, operation and post-closure. The regime for each inspection will therefore depend on the competence level of the inspecting personnel and on the extent of their remit. A simplified overview of the objectives of inspection within the different inspection regimes is shown in Figure 1 and slightly elaborated Table 1.

Figure 1: Simplified objectives of the inspection and reporting process

At operator level, the objectives are likely to be highly site-specific within the context of the safe and efficient management of the process, and the inspection will be part of a broad framework of individual inspections which, in combination, cover the whole operation.

At the level of corporate or independent inspection the remit will cover the whole operation and include an audit of the individual inspections undertaken by operators. Such high-level inspections are intended to confirm the continued safe, stable and compliant operation of the facility and are in many regimes a statutory obligation.

At regional or national level, inspections, and specifically the reporting of inspection experiences by the inspecting authorities, are important tools that contribute to the continuous improvement of permitting procedures, the setting of permit conditions and the legislative framework. This, in turn, ensures that the overall environmental and safety objectives and quality standards can be met at local, regional, national and EU level. This is illustrated in Figure 2. Inspections undertaken by the regulatory authorities at regional or national level
tend to be less technical in content but, in the majority of instances, they comprise an audit of the above inspection routines to ensure that the operation is fully compliant not only in terms of safety and stability but also in its performance and application of its inspection and monitoring routines. Further, inspections ensure that issues of concern identified, and remedial actions recommended by the inspecting engineer, are corrected in a timely manner.

Table 1: Objectives of the various levels of inspection

<table>
<thead>
<tr>
<th>Enforcing Authority – Regulatory compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>To ensure that the facility is being managed in a safe and stable manner and in compliance with the requirements of the permit.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Independent Expert – Technical compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>To ensure that the facility is safe and stable, constructed, operated and closed in accordance with design parameters and in full compliance with the permit (see also remarks at the bottom of page 4 and top of page 5).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Owner – Regulatory compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>To ensure that the facility is being operated, maintained and managed in a safe and efficient manner and in compliance with the requirements of the permit and that there is a suitable and sufficient paper trail to confirm this.</td>
</tr>
</tbody>
</table>

For a controlled installation, inspections, as defined by the recommendation on minimum criteria, 2001/331/EC, entail:

- checking and promoting the compliance of controlled installations (in this case any extractive waste facility authorised under the MWD (2006/21/EC)) with relevant environmental requirements set out in Community legislation (in this case Directive

Figure 2: Illustration of the role of an authority inspection (IMPEL, 2008).

Draft September 2011
2006/21/EC and Directive 2000/60/EC in particular) as transposed into national legislation or applied in the national legal order;

- monitoring the impact of controlled installations on the environment to determine whether further inspection or enforcement action (including issuing, modification or revocation of any authorisation, permit or licence) is required to secure compliance with legal requirements.

However, it is important to recognise that an extractive waste facility is an engineered structure or a "designated area" which should be designed to meet all permitting requirements, including geotechnical, geochemical and environmental. Thus the overriding driver of the inspection process is ensuring that the engineered structures or the designated areas for the accumulation of waste perform to design, and that the facility is managed and closed properly thus that environmental compliance is achieved.

### 1.3 Existing guidance and information

In preparing this guidance document the authors have been cognisant of the many reports, publications and papers which provide assistance in this field. For the most part these have been referenced in the text and have been drawn on as background for the study. However, it is evident from the fact that the EC requires an extractive waste specific inspection guidance that none of the referenced sources provide a satisfactory depth to the subject and do not cover the geotechnical and geochemical complexity of a mine waste facility or the specific issues related to different types of extractive waste facilities.

A number of key guidance documents and publications provide useful general information about inspections and the regulatory frameworks:

- The European Parliament and Council have published Recommendation 2001/331/EC for minimum criteria for environmental inspections in the Member States.
- The Commission has followed up on the above with Communication COM(2007) 707 final which is a review of Recommendation 2001/331/EC that includes a report on implementation of the Recommendation within the Member States.
- IMPEL has contributed to the development and improvement of inspection practices and tools and has established a Cluster on permitting, inspection & enforcement and been instrumental in the development of the Recommendation 2001/331/EC, minimum criteria for environmental inspections. The Cluster has also supervised the execution of a series of projects aiming at promoting good practice on environmental inspections within the framework of the minimum criteria. including a Management Reference Book for Environmental Inspectorates (IMPEL, 1999), Best Practices concerning Training and Qualification for Environmental Inspectors and Step-by-step Guidance book on planning and prioritising of environmental inspections, called “Doing the right things II” (IMPEL, 2008).
- The MonTec report on Guidelines on Financial Guarantees and Inspections for Mining Waste Facilities (2007) provides a number of useful case studies, and focuses on inspections performed by the authorities. However this report highlights the complexity of the issues related to extractive waste facilities and the need for an inspection team with expertise in many different disciplines (geotechnical engineering, waste management, civil engineering, biodiversity, air quality, hydro-geochemistry and soils amongst others).

The above publications and initiatives include broad coverage of mining waste facilities but are very general in nature. While acknowledging the existence of this general framework the
guidance drafted in this document focuses specifically on the technical aspects of the inspection of mining waste facilities. The guidance recognises the limited resources available to the competent authority and that it might not be feasible for them to maintain such the breadth of expertise required in an inspection team. Instead it might be more realistic in some cases for the inspecting authority to review and inspect the reports, recommendations and implementation schedules resulting from inspections performed by highly specialised and authorised/certified independent experts.

To be able to draw upon the experiences with inspection of mining waste facilities existing within the Member States, the members of the TAC on mining waste have been asked to fill out or rather review and complete a questionnaire based on preliminary versions prepared by the study team. The processed results are being used in the preparation of the guideline. Appendix 1 shows the questions on inspection in the questionnaire. To also consult other stakeholders, including representatives of the mining sector, two workshops have been/will be held as part of the project.

2. LEGISLATIVE BACKGROUND

The need for specific guidance on inspection of mining/extractive waste facilities arises as a consequence of the implementation of the Extractive Waste Directive/Mining Waste Directive (MWD) (Article 22 (d) of the Directive). The key section of the MWD and the related Decisions are presented as background, and other Directives referenced where they are considered to be relevant.

2.1 The Mining Waste Directive

The legal requirements for inspections of mining waste facilities are based on Article 17 of 2006/21/EC where inspections by the competent authority are addressed:

2.1.1 The authorities

"1. Prior to the commencement of deposit operations and at regular intervals thereafter, including the after-closure phase, to be decided by the Member State concerned, the competent authority shall inspect any waste facility covered by Article 7 in order to ensure that it complies with the relevant conditions of the permit.

Article 17 clearly indicates that the inspections by the competent authority shall cover all waste facilities permitted under the MWD (2006/21/EC) during all phases of the life-cycle (pre-deposition, operation and post closure). It is equally clear that the objective of the inspections is not only to ensure compliance with the permit conditions but also the overriding requirement for safety and stability. However, the frequency of the inspections is not defined and it is explicitly stated that this shall be decided by the Member State.

Moreover in Article 7 (4) of the MWD it states that “Member States shall take the necessary measures to ensure that competent authorities periodically reconsider and, where necessary, update permit conditions on the basis of ....monitoring results reported by the operator pursuant to Article 11(3) or inspections carried out pursuant to Article 17”, recognising that inspections are a powerful instrument in assuring the ongoing safe and environmentally sound operation of extractive waste facilities.

2.1.2 The operator
Article 17 (2). Member States shall require the operator to keep up-to-date records of all waste management operations and make them available for inspection by the competent authority and to ensure that, in the event of a change of operator during the management of a waste facility, there is an appropriate transfer of relevant up-to-date information and records relating to the waste facility."

Article 17 indicates that the operator must keep up-to-date records of all waste management operations and make them available for inspections by the competent authority. Furthermore, in the event of a change in operator during the management of a waste facility, a proper transfer of up-to-date information and records relating to the facility has to be guaranteed. However, the information to be included in the “records” is not defined, though it is implicit that this should include all information relevant to the management of the facility.

Article 17 indicates that inspections apply to all extractive waste facilities authorised under the MWD (2006/21/EC). However, it is accepted good practice that where any risk is posed to operators, third parties or to the environment generally, many of the principles which apply to Article 17 facilities may also be applicable to sites not complying with the MWD criteria, albeit at a lower level of intensity.

In addition, Article 4 states that the facility be managed at all stages using best available technologies (BAT) and provides the general requirements with reference to best available techniques for management of tailings and waste-rock in mining activities (BREF EU, 2009). However, though the general provisions of the BREF are referenced in this guidance it is generally recognised that reference document is neither comprehensive nor fully up-to-date. It is therefore suggested that the following report should take precedence in all aspects related to the inspection of mine waste facilities.

2.1.3 Exemptions
Article 2 (3) states that “Inert waste and polluted soil resulting from the prospecting, extraction, treatment and storage of mineral resources and the working of quarries and waste resulting from the extraction, treatment and storage of peat shall not be subject to Articles 7, 8, 11(1) and (3), 12, 13(6), 14 and 16, unless deposited in a Category A facility.” Since Article 17 refers only to facilities covered by Article 7, this means that facilities containing exclusively inert waste and/or polluted soil from the above activities may not require inspection as stipulated in Article 17, unless they are classified as Category A facilities. While the definition of inert waste is described in Commission Decision 2009/359/EC (see Section 2.2), the definition of polluted soil is in effect regulated individually by the Member States. The criteria for classification of waste facilities as Category A or not Category A are given in Commission Decision 2009/337/EC (see Section 2.2). In this context the assessment of the consequences of failure due to loss of structural integrity as stipulated in Articles 1 through 7 in Commission Decision 2009/337/EC will be of particular importance with respect to the classification of facilities containing only inert waste and polluted soil and hence the requirement for inspection. Since some degree of inspection will be required for any waste facility, it could be questioned whether this exemption is deliberate or was overlooked when the MWD was drafted and approved.

2.2 The BREF
The Reference document on best available techniques for management of tailings and waste rock in mining activities (BREF, EU, 2009) indicates that BAT, with respect to inspections,
auditing and reviews, includes the following recommendations which are not restricted to Category A facilities:

Tailings ponds/tailings dams:
- visual inspections (Section 4.4.14.3)
- annual reviews (Section 4.4.14.3)
- independent audits (Section 4.2.3.2 and Section 4.4.14.3)
- safety evaluations (SEED) (Section 4.4.14.3)

Waste heaps:
- visual inspections (Section 4.4.14.3)
- geotechnical reviews (Section 4.4.14.3)
- independent geotechnical audits (Section 4.4.14.3).

Furthermore, the BREF provides the following guidance on the frequency of the inspections, audits and reviews (Section 4.4.14.3) for extractive waste facilities and on the qualifications required for undertaking the different types of inspections (Table 3 and Table 3).

**Table 2: Recommended frequency for tailings management facilities (EU, 2009)**

<table>
<thead>
<tr>
<th>Assessment type</th>
<th>Frequency</th>
<th>Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Operational phase</td>
<td>After-care phase</td>
</tr>
<tr>
<td>Visual inspection</td>
<td>Daily</td>
<td>Half-yearly</td>
</tr>
<tr>
<td>Annual review</td>
<td>Yearly</td>
<td>Yearly</td>
</tr>
<tr>
<td>Independent audit</td>
<td>Bi-annually</td>
<td>Every 5 - 10 years</td>
</tr>
<tr>
<td>Safety evaluation of existing dams (SEED)</td>
<td>15 - 20 years</td>
<td>15 - 20 years</td>
</tr>
</tbody>
</table>

Note 1: The visual inspection in the after-care phase may be half yearly or be determined by the inspecting engineer.  
Note 2: The SEED approach may only be appropriate for the highest risk facilities when the independent expert considers it to be necessary.

**Table 3: Recommended frequency for waste-rock facilities**

<table>
<thead>
<tr>
<th>Assessment type</th>
<th>Frequency</th>
<th>Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Operational phase</td>
<td>After-care phase</td>
</tr>
<tr>
<td>Visual inspection</td>
<td>Daily</td>
<td>Half-yearly</td>
</tr>
<tr>
<td>Geotechnical review</td>
<td>Yearly</td>
<td>Every 2 years</td>
</tr>
<tr>
<td>Independent geotechnical audit</td>
<td>Every 2 years</td>
<td>Every 5 - 10 years</td>
</tr>
</tbody>
</table>

Further, the BREF indicates that the results of both operating and independent inspection should be made available to the competent authority and should include all relevant engineering and environmental operating, monitoring and performance data related to the facility. This is underwritten in the recommendation of European Parliament and the Council of 4th April 2001 which provide the minimum criteria for environmental inspections in the Member states (2001/331/EC).
2.3 Minimum criteria for inspections


The minimum criteria shall apply to all installations, enterprises and facilities (defined as “controlled installation”) whose emissions or waste disposal/recovery are subject to permitting under Community legislation. Thus, as extractive waste facilities are subject to permitting under the MWD (2006/21/EC), the minimum criteria laid down in these recommendations are deemed apply to the inspection of extractive waste facilities.

These recommendations also provide the definitions of “controlled installation”, together with guidance on the type of inspections (“routine” and “non-routine”), the “inspecting authorities” and the operator (“operator of the controlled facility”), as well as on the “activities” to be included. It is clearly the intent of the recommendations that these definitions should apply in all respects to inspections of extractive waste facilities.

2.3.1 General Inspection Planning

The recommendations (2001/331/EC) state that inspections should be planned in advance and that a plan for inspections within the territory of the Member State and for the controlled installations within it should be publicly available at all times. Such a plan or plans may be established at national, regional or local levels, but Member States should ensure that the plan or plans apply to all environmental inspections of controlled installations within their territory and that the inspecting authorities are designated to carry out such inspections.

The decision (2001/331/EC) recommends that the plan and objectives for all inspections of extractive waste facilities should be established in advance of operation and be available not only to the Operator of the controlled installations but also to the Competent Authority within the territory of the Member State. Such plans may be established either by the Member States’ own competent authority at national, regional or local levels, or by the operator to an agreed framework. However, regardless of the author, the member state should ensure that they are applicable to the inspection of all controlled installations within its territory and that the appropriate responsible inspecting authorities are fully identified.

2.3.2 Site-specific Inspection Planning

The recommendations also give guidance on the coordination of site visits between different inspecting authorities, on reporting of site visits and on the inspector’s legal right to access to the site and to information for the purpose of the inspection (see Figure 3). It also recommends that inspection reports produced by the Competent Authority be made available to the operator, and the synoptic reports be made publically available no later than two months after the date of the inspection.

Non-routine inspections may also be required in response to complaints, in connection with the issuing, renewal or modification of an authorisation, permit or license, or in the investigation of accidents, incidents and occurrences of non-compliance. The recommendations outline the purpose of such non-routine inspections which are intended to ensure that any deficiencies in the structures or waste management are corrected.

Finally, the recommendations indicate the importance of the interchange of experience between Member States (assisted by IMPEL) regarding inspections, stating that Member
States should assist each other in administrative issues and where appropriate regarding exchange of inspecting officials.

**Figure 3: Illustration of a tiered inspection system**

2.4 **The Commission Decisions**

In accordance with Article 22(1) of the MWD, the Commission has adopted the following implementing measures:

3. Commission Decision 2009/360/EC completing the technical requirements for waste characterisation, adopted on 30/04/09;
5. Commission Decision 2009/358/EC on the Harmonisation, the regular transmission of the information and the questionnaire referred to in Articles 22(1) (a) and 18, adopted on 29/04/09.

In accordance with Article 22 (1) (b and f), the Commission has also given a mandate to CEN requesting development or adoption of the required standardised sampling, testing and chemical analytical methods (will be further detailed).

The Commission has also formally adopted the reference document on the best available techniques on the management of waste from extractive industries, adopted on 7/01/09 as 2009/C 81/06.
Of the above listed decisions only two address inspection, namely the Reference document as described above and the decision 2009/358/EC on the harmonisation of the implementation of the MWD. In decision 2009/358/EC, Members States are requested to give information regarding:

- The inspecting authority (in the list of permits issued under the MWD as defined in Annex I of 2009/358/EC).
- The inspecting authority of a facility that has reported an incident has to be reported according to articles 11(3), 12(6) and 18(2) of the MWD and Annex II of 2009/358/EC.
- The inspecting authority and numerous questions on how inspections have been planned, performed, reported and followed-up in the MS in the questionnaire outlined in Annex III of 2009/358/EC.

None of the other decisions explicitly address inspections. However, as part of the inspections, it should be confirmed that applicable parts of the decisions are considered in the waste management plan.

2.5 Other Directives (additional explanation may be added)

Other directives that will, or may, have an influence on the conditions for inspection of mining waste facilities, or from which experience may be gained, include:


2.6 Legislative context

The significant body of reference material and legislation relating to the design, operation and closure of extractive waste facilities provides excellent background information to this report. However, the Recommendations such as 2001/331/EC reference the overriding legal framework for inspections by the competent authority and do not address the specific technical nature of inspections which are the focus of these guidelines. It must therefore be emphasised that the timetable and the particular recommendation referenced in this Recommendation for example relate, by inference, only to the high level compliance inspections undertaken by the competent authority and could not apply to those technical inspections undertaken by the operator or by the appointed (independent) expert due to the programme implications. The clear inference from this is that inspections of mine waste facilities need to be tiered, with the results from each being used to compile the compliance audit as shown in Figure 3. It is noted that the inspections undertaken by the operator are reviewed and summarised during the inspection by the external independent inspection and
that a further synopsis is submitted to the competent authority to confirm compliance. The volume of data collected, and the extent of interpretation and analyses, would generally preclude the detailed external audit results from being available to the authorities within the specified two-month period. This timetable therefore must relate to the issue to the Competent Authority of the inspection report following the independent external audit within two months of its finalisation and signature. It must be emphasised that this is wholly consistent with the intent of the Directive, i.e. ensuring that the operator is fully compliant with the conditions of his permit and is performing all necessary inspections and operation in accordance with good practice. Examples of the timetables for these various levels of inspection are also shown in Table 4 for example.

<table>
<thead>
<tr>
<th>Level</th>
<th>Inspection Frequency</th>
<th>Reporting period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operator</td>
<td>Daily/weekly/monthly</td>
<td>Month-end summary reports prepared for internal management review</td>
</tr>
<tr>
<td>Mine management</td>
<td>Monthly/three monthly</td>
<td>Monthly/three monthly review with an annual synopsis of all monitoring data completed in advanced of visit by external inspector</td>
</tr>
<tr>
<td>External inspector</td>
<td>Annual/biennial</td>
<td>Inspection report based on visit and on review of annual monitoring data report completed within three months of inspection date.</td>
</tr>
<tr>
<td>Competent Authority</td>
<td>Annual/biennial</td>
<td>Compliance report based on external inspection report and completed within two months of its completion.</td>
</tr>
</tbody>
</table>

3 FRAMEWORK FOR INSPECTIONS BY THE COMPETENT AUTHORITY

Member States plan and carry out environmental inspections of all industrial installations and other enterprises and facilities whose air emissions, water discharges, waste disposal or recovery activities are subject to authorisation, permit or licensing requirements under Community law. The MWD requires the Competent Authority to undertake regular inspection of all extractive waste facilities permitted under the MWD. However, given the complexity of the waste facilities covered by this Directive and the wide range of skills and expertise likely to be required in order to fulfil the legislative requirements, it is anticipated that in most cases Regulators will be unlikely to retain such expertise in-house. Further, it is evident from existing national legislation that detailed technical inspection by the Regulator is unlikely to be the most efficient or cost-effective method of complying with the Directive. It is therefore necessary to provide Regulators with a framework which ensures that the requirements are being met in order that the facility is fully compliant and that neither the regulator nor industry are overburdened. This will enable the Competent Authority to comply with the requirements of the MWD without imposing a technical load for which they may not have the finances, staff or resources.

This Section sets out the scope and guidance for Regulators to ensure regulatory compliance and the enforcement of any corrective works or remedial measures identified to be necessary.

3.1 General inspection plan

The recommendations (2001/331/EC) state that inspections should be planned in advance and that a document detailing both the programme and scope for inspections and the controlled installations within the territory of the Member State should be publicly available. Such plan...
or plans would ideally be established as part of territorial permitting and would be expected to follow national guidelines. Of importance is that it is incumbent on the Member States to ensure that these guidelines apply to the inspection of all controlled installations within each territory and that the relevant Competent Authorities responsible for overseeing such are identified and the roles of the relevant personnel clearly designated.

The EC recommendations define the information which should form the basis for this plan, together with the minimum requirements for the content. Each plan should include the following:

a) the geographical area which it covers, which may be for all or part of the territory of a Member State;
b) the defined time period, for example one year;
c) specific provisions for revision of the plan;
d) the specific sites or types of controlled installations covered [extractive waste facilities] which in accordance with Article 17 in 2006/21/EC shall cover all waste facilities permitted under the MWD (2006/21/EC) during all phases of the life-cycle (before operation, during operation and after operation);
e) the programmes for routine inspections, taking into account the associated risks; and where appropriate, the frequency of site visits for different types of specified controlled installations;
f) the procedures for non-routine environmental inspections in response to complaints, accidents, incidents and occurrences of noncompliance and for the purpose of granting permission;
g) details of the coordination between the different inspecting authorities, where relevant;
h) the National and EC legal requirements to be complied with, i.e. MWD;
i) a register of controlled installations within the geographical area, together with a list of all extractive waste facilities subject to permitting under the MWD;
j) a general assessment of all controlled installations and particularly with respect to major environmental issues within the geographical area and the level of compliance with EC legal requirements;
k) data on and from previous inspection activities, if any.

Each Member State should define the structure, substance and contents of its general plan. Some guidance may be available from other sources, such as relevant sections of the IMPEL Report (1999 and 2008), which provides general guidance on the issues to be considered when developing inspection plans. It is, however, important to note that most of the available guidance does not apply in all respects to mine waste facilities, where industry-specific considerations are tantamount. Thus, though examples of how to prioritise and to develop strategies for inspections are provided by IMPEL (2008) for extractive waste facilities, the assessment of the risks will determine the relevant criteria. The risk classification is performed to determine whether the facility is “Category A” or “Not-Category A” according to Annex III of the MWD and as further detailed in Commission Decision 2009/337/EC on the Criteria for the classification of waste facilities. Thus the necessary inspection frequency for a specific facility will be based both on the risk assessment and on the status of the facility, with direct reference to the environmental conditions in the area where it is located. In general, the inspecting engineer would be expected to stipulate the frequency and the technical requirements, which are then defined in the permit. However, it would be anticipated that all operating Category A facilities would be inspected on an annual basis and that, post-closure, the frequency would be defined by the ongoing risk posed and may thus
vary with time. For facilities defined as Not-Category A the associated risks and good practice will in most instances require ongoing inspection and, depending on the location of the facility and the risks posed, the frequency may vary from annually to every fifth year. However, where any facility is capable of containing more than 10,000m$^3$ of water (Cambridge 2006, ICOLD 2010), annual inspection would be expected.

The recommendations (2001/331/EC) clearly define when Member States should make or require non-routine site visits to be carried out:

a) in the investigation by the relevant inspecting authorities of serious environmental complaints, and as soon as possible after such complaints are received by the authorities;
b) in the investigation of serious environmental accidents, incidents and occurrences of non-compliance, and as soon as possible after these come to the notice of the relevant inspecting authorities;
c) where appropriate, as part of the determination as to whether and on what terms to issue a first authorisation, permit or licence for a process or activity at a controlled installation or the proposed site thereof or to ensure the compliance with the requirements of authorisation, permit or licence after it has been issued and before the start of activity (this is in line with the requirements of the MWD Article 17 regarding the requirement to inspect the facility “prior to the commencement of deposit operations”);
d) where appropriate, before the re-issue, renewal or modification of authorisations, permits or licences.

The recommendations (2001/331/EC) specify the purpose of such non-routine inspections as follows:

a) to clarify the causes of the event and its impact on the environment, and as appropriate, the responsibilities and possible liabilities for the event and its consequences, and to forward conclusions to the authority responsible for enforcement, if different from the inspecting authority;
b) to mitigate and, where possible, remedy the environmental impacts of the event through a determination of the appropriate actions to be taken by the operator(s) and the authorities;
c) to determine action to be taken to prevent further accidents, incidents and occurrences of non-compliance;
d) to enable enforcement action or sanctions to proceed, if appropriate; and
e) to ensure that the operator takes appropriate actions post event.

It is noted that inspections at all stages of the extractive waste would need to be in agreement with Annex II of the decision 2009/358/EC on the harmonisation of the implementation of the MWD. Recommendations regarding all inspections either prior to the commencement of deposit operations or during all stages of facility closure would generally follow the above. However further details is provided in Section 6. (a step by step description of the planning procedure may possibly be added)

3.2 Facility inspections

3.2.1 General
It is assumed that all operations adopting good practice would apply BAT to their waste management operations and would, as normal practice, engage an independent expert to
oversee all aspects of waste management on the site, in addition to implementing their own inspection regime (as further detailed in chapters 4 and 5). Where no such inspection practices are in evidence the competent authority would have either to implement the full range of inspections and data recording as outlined in chapter 4 and 5 themselves, or to have recourse to legal action. As it is unlikely, or be impractical, for the authority to undertake the detailed inspections required due to the resources required, they would almost certainly need to threaten or to instigate immediate withdrawal of the operating permit for such a facility until the necessary corrective measures had been taken by the operator.

3.2.2 Scope and frequency of inspections by the Competent Authority
According to Article 17 of the MWD, inspections should, prior to the commencement of deposit operations and at regular intervals thereafter, including the post-closure phase, ensure that all facilities covered by Article 7 comply with the relevant conditions of the permit. Compliance with this Article shall in no way reduce the responsibility of the operator under the conditions of the permit. This means that all extractive waste facilities permitted under the MWD are included in the scope. These facilities are to be inspected throughout their life cycle to ensure that they are built, operated and closed in a safe and environmentally correct manner according to the permit and relevant legislation. The purpose of an inspection by the authority would generally not involve the detailed technical assessment of the facility, which would be expected to be covered by the independent external expert. However, the inspection by the authority would be dependent on the findings and recommendations of the expert inspection report, which should be made available in advance to the authority inspection team.

The table below shows the current frequency of inspections across the EU as obtained from the questionnaire issued for the purpose of this report. To be completed on receipt of completed questionnaires

Table 5: Existing EC practice for inspection frequency for mine waste facilities

3.2.3 Pre-inspection procedures
As for all technical studies, success is highly dependent on preparation undertaken in advance of the inspection. Accordingly, it is important that the authority inspector be provided with all relevant information concerning the site setting (social, topographical, environmental, hydrological and seismological, amongst others) as well as the extractive operations associated with the mine waste facility and the basic description, design history and current operation of the facility itself. The degree of preparation for an inspection depends on the type of inspection and the size, scale, type and complexity of the facility. However, for the compliance inspection the majority of relevant background data will be derived from the permitting documentation and from the most recent expert or independent audit reports. The latter should provide, in sufficient detail for the purposes of assessing compliance, a summary of the key facets of the operation, including the important geotechnical, geochemical and environmental monitoring results. Further, notification of changes to the design, operation or management plan, and of any investigations, untoward events or complaints, should also be made available, either through the statutory body responsible or the independent inspection report. Studying the above will provide suitable background information to enable a satisfactory understanding of the entire operation, the specific activities and the production processes on the site to be inspected.

Prior to any site visit it is essential that a carefully planned scope for the inspection be prepared in order to ensure that a decision on compliance and on the adequacy of existing site
procedures can be made, and any perceived corrective actions identified. The basic purpose of the plan is to provide the inspector or inspection team with a step-by-step guide to compiling relevant evidence about a facility’s procedures and practices, and to ensure that the operator is able to provide any additional information in advance or data summaries before the site visit.

General details on how to prepare the inspection plan can be found, for instance, in IMPEL (1999). However, inspections of extractive waste facilities differ in a few important respects from environmental inspections of other controlled installations:

- specific legislation (MWD with decisions as described above) applies to extractive waste facilities but not to other types of controlled installations;
- the MWD sets a range of requirements that are directly or indirectly reflected in the permit and relate to the waste management plan, including the closure plan and the financial guarantee;
- the operator regularly conducts detailed internal and independent inspections of the extractive waste facility, in addition to conventional “environmental audits”;
- extractive waste facilities are subject to continuous change and modification during operation as they are built over time. This necessitates for specific attention to ongoing construction and “as-built” details in comparison with that originally permitted.

The findings and recommendations of the independent expert’s report should provide the framework for the inspection by the Competent Authority as such independent inspections would address all technical aspects of the facility. Providing that this report has been prepared competently, the principal issues to be addressed by the Competent Authority would cover the following:

- assessment of the competence and completeness of the independent inspection report;
- a review of the independent inspection report findings, the recommendations and the programme for their implementation;
- review of the waste management plan;
- assessment of the validity of any progressive closure measures, and the adequacy of the closure planning;
- review of the interface between the MWD and other legislation (e.g. the Water Framework Directive, Seveso II Directive, IPPC Directive);
- assessment of any potential risks related to other activities on the site with respect to the waste facility (e.g. with regard to water management, infrastructure, etc).

In regions where there is a risk of cross-border impacts, appropriate contacts would need to be made with Competent Authorities in adjacent regions and, where necessary, co-operation in the way of monitoring data or other information exchange.

3.2.4 Field inspection activities
Minimum requirements for site visits are given in 2001/331/EC and include checking compliance, coordinating with other inspecting authorities, assessing the full range of environmental impacts, promoting operator’s knowledge and understanding, and reporting requirements. The site visit for an extractive waste facility will, to a large extent, be limited to confirming and revisiting the findings, recommendations and programme for implementation as included in the independent inspection report. It is recommended that the

Comment [j5]: It would be very nice to give a better review of linked legislation! Great help to poor inspector and authority personnel.
site visit be concluded with a round-up meeting at which the Competent Authority would present to the operator and, as appropriate, the independent expert, the findings of the inspection and any recommendations. This meeting should be fully minuted and agreed by all attendees.

3.2.5 Post-inspection activities

Minimum requirements following site visits are given in 2001/331/EC. This indicates that, after every site visit, the inspecting authority process or store, in suitable data files, the inspection data and the authority’s finding in a form compliant with EC legal requirements. These findings should include an evaluation of the inspection, and conclusions as to whether any further action or follow-up inspections are required, or whether enforcement proceedings, sanctions or modifications to the permit are necessary. The resulting reports should be finalised as soon as possible.

In addition, the minimum requirements state that such reports are properly recorded in writing and maintained in a readily accessible database. The full reports or, where appropriate, the conclusions of such reports, should be communicated to the operator of the controlled installation in question in accordance with Directive 90/313/EEC. These reports should be publicly available within two months of the inspection having taken place. Where there is the risk of cross-border impacts, the Competent Authorities of the bordering country should also receive the report.

The format of the inspection report should follow a clear outline regarding the specific information and the structure of the report (i.e. introduction, activities, attachments, etc) should be simple and standardised. It is not envisaged that such reports would be highly technical or lengthy. However, they should include the following:

- scope of the inspection, outlining its purpose and any specific reasons (e.g. complaints from third parties, incidents etc);
- list of the documentation reviewed for the inspection;
- brief description of the inspection visit, including full details and role of all participants, i.e. the independent expert and the operator’s personnel;
- summary of particular actions taken during the inspection visit with their chronology, such as physical sampling, details of additional evidence or observations made during the inspection;
- findings of the inspection, including competence of available documents provided by the operator, results of any sampling and findings of interviews with site operators and management;
- conclusions, recommendations and corrective measures.

It is further considered appropriate that the report should include the agreed minutes of the final inspection round-up meeting.

4 INDEPENDENT INSPECTION REGIME (this chapter may be somewhat reorganised)
Experience in a number of well-regulated jurisdictions has shown the value of engaging suitably qualified independent professionals to undertake inspections and to report on them to the relevant bodies. The independent expert fulfils the central function of regulatory compliance and corporate assurance, and thus provides to the Regulator the key documentation to ensure the compliance of a particular facility. This section explores in detail the role of the independent inspecting engineer and provides guidelines for minimum qualifications, outlines of the inspecting role, reporting and the interaction between recommendations and enforcement.

4.1 **Scope**

The inspection process requires parameters against which the performance of the facility can be judged. For an operating mine waste facility these are derived from the design and the permit and, in the case of an abandoned facility, would need to be derived retrospectively by risk assessment, investigation and back analysis.

A facility must be operated and maintained during its operating life in accordance with design rules. The design of the facility should cover all stages of project development, i.e. construction, operation and closure, and should include an integrated strategy for the engineering and environmental monitoring of the facility to ensure full compliance with design assumptions, environmental requirements and mitigation measures. Design is thus based on an agreed set of parameters and a set of operating rules which must be followed if the structure is to remain fit for purpose. An operator thus requires instrumentation, monitoring and inspection routines throughout the operating life and post closure to ensure that all structures remain within design and operating parameters. It is recognised that failure to inspect and monitor may result in the safety of the structure being put at risk, with the increased probability of death or injury to owners, users, operators and third-parties, and to negative environmental impact. As part of the integrated design of the facility, a waste management plan and an operating manual, which may be an expanded version of the former, are required and form the background against which the inspection routines are carried out, thus defining their scope.

4.2 **Statutory appointments**

In some Member States, the role and responsibilities of the inspecting engineer are defined by statute and his qualifications approved by a statutory body. However, in most this is not the case and thus operators and competent bodies will need to rely on guidance with regard to competence and suitability of the inspector employed to undertake such an important role. It may be that the EC will eventually establish an approving authority to ensure that all facilities covered by the MWD are inspected by a person of suitable experience and competence.

4.3 **Qualifications and competence**

It is important that a facility be inspected by an engineer with the relevant qualifications and experience. The person engaged should be able to commend good practice and to identify poor procedures and potentially serious defects so that they may be corrected and a failure prevented. It is recognised that the range of skills and technical expertise required for such an inspection is significant, and thus it is unlikely that a practitioner with less than ten years’ experience will have the necessary skills to undertaken the role. Guidance for the minimum qualifications for the inspection of both tailings management facilities and waste rock dumps is shown in Tables 6 and 7.
Table 6: Minimum recommended qualifications for the independent inspection of a tailings management facility

<table>
<thead>
<tr>
<th>The generally recognised qualifications that make for competence for independent inspection of a Category A TMF, as underwritten by the EWD, are listed below:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitable engineering degree;</td>
</tr>
<tr>
<td>Professional qualification – in the UK e.g. FICE (Fellowship of the Institution of Civil Engineers), requiring a minimum period of practical experience in industry and peer review;</td>
</tr>
<tr>
<td>Design and construction experience of all facets of dam engineering;</td>
</tr>
<tr>
<td>Statutory appointment as a suitably qualified civil engineer,</td>
</tr>
<tr>
<td>Proven expertise (minimum 10 years) of inspections of TMFs;</td>
</tr>
<tr>
<td>Minimum 15 years’ experience of engineering and environmental aspects of mining projects, and specific knowledge of the geotechnical characteristics and behaviour of a range of mine wastes, i.e. coarse rock to fine tailings, including a basic understanding of ARD;</td>
</tr>
<tr>
<td>It is important to note that the list deliberately requires practical industrial experience and that competence on the grounds of academic ability alone is insufficient and implies full harmonisation of qualifications across the EU.</td>
</tr>
</tbody>
</table>

Table 7: Minimum recommended qualifications for the independent inspection of a waste rock facility

<table>
<thead>
<tr>
<th>The generally recognised qualifications that make for competence for independent inspection of a Category A waste rock dump, as underwritten by the EWD, are listed below:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitable engineering degree;</td>
</tr>
<tr>
<td>Professional qualification – requiring a minimum period of practical experience in industry and peer review;</td>
</tr>
<tr>
<td>Design and construction experience of all facets of geotechnical structures;</td>
</tr>
<tr>
<td>Statutory appointment as a suitably qualified civil engineer,</td>
</tr>
<tr>
<td>Proven expertise (minimum 5 years) of inspections of dumps;</td>
</tr>
<tr>
<td>Minimum 10 years’ experience of mining projects, and specific knowledge of the geotechnical characteristics and behaviour of a range of mine wastes, i.e. coarse rock to fine tailings, including a basic understanding of ARD;</td>
</tr>
<tr>
<td>It is important to note that the list deliberately requires practical industrial experience and that competence on the grounds of academic ability alone is insufficient.</td>
</tr>
</tbody>
</table>

4.4 Role of the independent inspecting engineer/expert

The independent inspecting engineer fulfils roles during design and permitting, operation and post closure. A review of the design process at permitting will enable an independent consideration of the engineering and environmental mitigating procedures proposed, and identify shortfalls in the design or long-term expectations for the facility. The engineer may advise the operator or permitting authority that modifications in the design or operational parameters are required in order to meet environmental requirements or to comply with good practice. It will then be for the Competent Authority to ensure that such recommendations are incorporated into the permit conditions.

During operation, the purpose of the regular inspection by the independent expert is to ensure that the facility is safe and stable, both geotechnically and geochemically, and that it is fully...
compliant not only with the permit but also being operated in accordance with good practice. The independent expert may therefore identify areas where the operation is non-compliant and, in addition, where there are concerns that an untoward event might occur unless modifications to the facility are implemented. The inspector should make such recommendation in his report and ensure that there is a timetable for corrective action. In addition the independent expert should regularly review key design parameters in the light of increased knowledge of the site.

It is also the role of the independent expert to regularly review key design parameters such as hydrology, seismology or slope stability, particularly in the light of knowledge gained during the construction of the facility and the ongoing deposition of waste. In particular hydrological re-assessments and the design of the various waterways for the extreme event should be regularly reviewed, not just for water retaining facilities and spillway/decant designs, but also for stream diversions and run off control structures. The report should include the conclusions of such analyses and any recommendations arising, together with a timetable for corrective works where appropriate.

Post closure the frequency of such inspections may be reduced, but the intent and scope will not be affected. In some instances, inspections may be required in perpetuity due to the long-terms risks posed. However, in the majority of cases it will be the role of the independent expert to ensure that the structures are compliant with the closure plan and that no untoward events are identified. Finally, it will be the role of the independent expert to prepare the sign-off report stating that the facility is then safe and stable and that it no longer poses an unacceptable risk to life or to the environment.

4.5 Extent and frequency of inspections
The extent and frequency of the inspections will initially be defined by the permit and, in particular, by the risk categorisation previously discussed. An example of the likely frequency of inspections of Category A facilities is shown in Table 4 (Section 2.4). It is likely that in some jurisdictions a similar frequency of inspection regimes will apply to Non-Category A facilities in cases where the risks posed are considered to require a higher level of observation and control. Non-Category A TM facilities where a significant volume of water is stored above ground level may come into this category.

However, it may be necessary to undertake updated risk assessments of extractive waste facilities to ensure that any new or previously unidentified risk is addressed by existing procedures. The independent expert should therefore review the risks posed at each inspection and recommend changes to their frequency where the risks or the structural conditions of the facility indicate the need.

4.6 Site inspection
The site inspection visit may require a significant input from the independent expert, who will be expected to review all site data and to personally inspect all relevant facets of the facility. It is recommended that the waste management plan and the site operating manual be used to provide background to these inspections, and that the performance of the facility be compared with these parameters to enable compliance with design and permitting objectives to be assessed. To this end it is recommended that the operator prepare in advance a synopsis of all relevant inspection and monitoring data and instrumentation records, and provides this to the independent expert during the inspection. Where necessary, additional data or sampling may be sought during the inspection for confirmatory purposes. Figure 4a shows a typical design
of a conventional tailings management facility and Figure 4b shows the corresponding main parameters to be monitored at such a facility. Figure 5a and Figure 5b show the same features for a conventional coarse waste rock facility as do Figure 6a and Figure 6b for a conventional fine waste rock facility.

Figure 4a: Typical section of a conventional tailings management facility.

Figure 4b: Principal parameters to be monitored at a tailings management facility

Figure 5a: Typical section of a coarse waste rock dump

Figure 5b: Principal parameters to be monitored at a coarse rock waste dump

Figure 6a: Typical section of a fine waste rock dump

Figure 6b: Principal parameters to be monitored at a fine rock waste dump
4.7 Reporting
The preparation of the report will involve significant data review and analysis and, from
time-to-time, may involve stability assessments and hydrological reviews. The report should
include in summary the appraisal of all the information obtained and should identify any
shortfalls, whether in inspection regime, operations or sampling deficiency. It is not
anticipated that, where inspections are undertaken annually, stability or hydrological re-assessments will be required, but the independent expert should ensure that these are
undertaken, at minimum, at five- or ten-yearly intervals, dependent on the risk. Clear and
concise conclusions and recommendations should be prepared for inclusion in the report. The
report should be issued to the operator in draft for comment to ensure that there are no
inconsistencies or misinterpretation of data. However, it is considered unlikely that such a
review of the draft would lead to modification to the conclusions or recommendations. The
final report should be issued within six months of the date of the site visit and should include
an executive summary for issue to the Competent Authority and for publication. It is NOT
considered appropriate for the full report to be published.

An example of the contents of a report by the Independent Expert/Inspecting Engineer for a
tailings management facility is shown in Table 8 on page 21.

4.8 Recommendations in the interests of safety
The most important outcome of such inspections are the findings summarised in the
conclusions and recommendations and, in particular, any measures which are identified as to
be taken by the operator in the interests of safety. Recommendations for modifications to any
aspect of the management, operation or inspection and monitoring of the facility should be
identified in the report conclusions as being either in the interests of improving operational
efficiency or in the interests of safety. It is therefore anticipated that the inspector will
provide the following as part of these recommendations:

4.8.1 Recommendations in the interests of improving operational/environmental
performance
These will be recommendations relating to non-urgent aspects of the operation or
management of the facility. The inspector should include a general guidance timetable for the
implementation of these measures, which should be defined to suit the operator’s programme
and resources but be in accordance with good practice. However, recommendations should in
general be satisfactorily completed prior to the next expert inspection.

4.8.2 Recommendations in the interests of safety
These will be recommendations concerning issues relating to safety, stability or
environmental performance which require to be addressed with a degree of urgency. It is
essential that such issues be discussed directly with the operator and that the independent
expert engineer provides a strict timetable for completion of such works. The independent
expert should also indicate the key stages of the works at which a further inspection of the
specific elements of the facility are to be inspected by a suitably qualified engineer
(independent expert). All such works would need to be Certified as having been satisfactorily
completed, and the independent expert would then need to undertake a follow-up inspection
to ensure that the facility were then fully compliant. Where such works are required, the
Competent Authority would need to be advised of their extent, the reasons for their execution
and the timetable. It is anticipated that the Authority would track the works to ensure that
they were completed within the specified time frame. Further, the Authority should receive a
copy of the Certification prepared following the satisfactory completion of the measures.
### Table 8: Typical contents of an inspection report

| 1. Name and situation of mine waste facility: |
| 2. Name and address of Competent Person/Inspecting Engineer: |
| 3. Qualifications of Inspecting Engineer: |
| Date of appointment as Competent Person/Inspecting Engineer; |
| Date of expiry of statutory appointment. |
| 4. Name and address of Owner who appointed the Competent Person/Inspecting Engineer: |
| 5. Name and address of Enforcement Authorities: |
| 6. Name and address of Responsible Contacts: |
| Mine / Quarry Manager |
| Deputy Mine / Quarry Manager |
| Mill Superintendent |
| Facility Supervisor |
| 7. Date of Inspection: |
| 8. Background: |
| 8.1. The Terms of Reference i.e. legislation/regulation/compliance/post incident reporting |
| 8.2. Scope of Inspection |
| 8.3. Documentation |
| 9. General description: |
| 9.1 Description of the facility |
| 9.2 Catchment |
| 9.3 Geology |
| 9.4 Details of modifications, remedial works and history, recent reports and investigations |
| 9.5 Embankment details, main confining embankment; decant system; tailings disposal system, emergency spillway etc. |
| 9.6 Access details |
| 10. Description of inspection and conditions found: |
| 10.1 General |
| 10.2 Confining embankment(s), main embankment; saddle dams, disposal paddocks/lagoons |
| 10.3 Spillway arrangements, decant system, emergency spillway |
| 10.4 Reservoir area |
| 10.5 Return water system |
| 10.6 Tailings deposition |
| 10.7 Old workings |
| 10.8 Inspection and monitoring routines |
| 10.9 Instrumentation, surface/hydrographic survey; piezometers; seepage; freeboard |
| 11. Review of flood and discharge capacity: |
| 11.1 Hazard categorisation |
| 11.2 Flood study |
| 11.3 Alterations to overflow sill or to the level of water that may be stored |
| 11.4 Means of lowering the water and of controlling the inflow |
| 12. Seismic risk: |
| 13. Supervision provided by the Owner: |
| 14. Correctness of particulars in the statutory record: |
| 15. Findings and recommendations of the Competent Person/Inspecting Engineer: |
| 15.1 Conclusions |
| 15.2 Recommendations in the interests of safety and timetable for completion |
| 15.3 Recommendations not in the interests of safety |
| 16. Date of next inspection |

Dated this ____________ day of ___________________________ 2011

A. N. Other  
Competent Person/Inspecting Engineer  

17. Figures/Plans  
18. Photographs  

Appendices

Comment [j9]: Nice, but too general. Develop a checklist: what to look at (and how). Compare to ‘key parameters’ quoted above.
5 OPERATOR’S INSPECTION REGIME

This section sets out minimum standards for the scope and extent of the operator’s inspection and monitoring regime. The guidance outlines the obligations of all levels of staff at a facility, from the main board member responsible for corporate health and safety to the excavator operator or equivalent. The guidance uses the general sections through both a tailings management facility and both coarse and fine waste stockpiles shown in Figure 4 to Figure 6 inclusive, as examples of the range of elements to be inspected and the data recorded. In addition pro forma recording and inspection sheets are provided in the Appendices for guidance.

5.1 Scope

Mining activities are regulated by legal requirements and guidelines. The expectation and opinion of the public will determine the acceptability of the development of new mineral extraction operations as well as the permitting of ongoing operations. Waste management is an integral part of the mineral extraction process and is often seen as the negative aspect of a mining operation. It is therefore incumbent on the operator/owner of a mineral extraction site to ensure that the operation of an extractive waste facility meets the necessary standard of operation, management and performance. The operator therefore has the responsibility for ensuring that the facility is designed, built, operated and closed in a safe and environmentally sound manner (MWD Article 4). This Article establishes requirements for, amongst other issues, risk assessments, classification of facilities, and closure planning. Facility inspections are a crucial element in ensuring that all statutory and specific permitting obligations are fulfilled and are, in addition, an important management tool for ensuring that local operations and performance are compliant with good practice and efficient and safe waste disposal.

Strict operating principles, standards and guidelines need to be applied by operators in order to meet all requirements and expectations. Inspections are thus normally based on the following general principles (e.g. Mining RIDAS, 2010):

- safety and environmental policy
- facilities classified according to failure consequence
- scenario analysis
- safety analysis
- established and documented working methods
- established competence requirements
- systematic compilation of experiences
- continuous improvements
- transparency
- independent auditing

In order to implement these principles it is assumed that all operations are performed in a responsible manner and in accordance with legal requirements. Furthermore, the facility should be operated with the long-term perspective in mind, be driven and prioritised on a risk-based evaluation of safety and environmental impacts in cooperation with authorities and other stakeholders.

The operating and inspection regime for a facility, including all inspection, monitoring and record keeping, should be regularly reviewed by the operator to ensure efficiency and safety. The data so generated also provide the supporting framework for the independent inspecting
engineer’s site visit and report. In many environments the extent of the operator’s inspecting regime is defined by statute, whereas in others it follows best practice, corporate policy or reflects that described in the Reference document on best available techniques for management of tailings and waste-rock in mining activities (EU, 2009). However, regardless of national legislation it is clear that, without local supporting information, reports and records, the role of the independent inspecting engineer is diminished and his ability to report to the Competent Authority much reduced.

Figure 7 shows a simplified overview of the operator’s inspection system.

![Diagram of the operator’s inspection system]

**Figure 7: Illustration of the operator’s inspection system**

5.2 Organisation and competence

5.2.1 General

The organisation and the allocation of responsibilities for the inspection of all waste facilities and their associated structures, and for ensuring ongoing safety and stability and for environmental monitoring, should be clearly defined and documented. All personnel engaged in operation, surveillance, maintenance, safety preparedness, monitoring and control should be advised in writing of their duties and responsibilities and, in addition, have the relevant competence. The competence of all such personnel should be fully documented and include information related to education, training and experience. The operator is responsible for ensuring that the relevant personnel engaged in operation, surveillance and maintenance of a facility are properly resourced and supported at all times and, in addition, have the appropriate authority.

It is common practice for the duties and responsibilities of all personnel involved in the inspection and monitoring process be summarised in a site manual, which may be titled variously as the Operating and Maintenance Manual (O&M Manual), the Operation, Supervision and Maintenance Manual (OSM Manual) or, specifically for tailings management
facilities, the Dam Safety Manual (BAT document, EU, 2009). These manuals are generally prepared at the pre-deposition stage as part of the design process, and would e.g. in a summarised form constitute part of the waste management plan and thus be submitted with the permitting documentation and periodically updated to reflect the existing conditions.

The inspection process requires parameters against which the performance of the facility can be judged, and for a current/operating mine waste facility these are derived from the design and the permit. In the case of an abandoned facility these parameters would need to be derived retrospectively by risk assessment, investigation and back analysis. The facility must be operated and maintained in accordance with these design rules, and owners/operators require operating and maintenance rules which ensure that all structures remain within design and operating parameters. These parameters are based on the following principles:

- design is based on rules which must be followed if the structure is to remain fit for purpose;
- inspection and monitoring is required to ensure safety, stability and design/permit compliance;
- failure to inspect and monitor may result in the safety of the structure being put at risk;
- increased risk leads to the increased probability of death or injury to owners, users, operators and third-parties, and to negative environmental impact;

The need for instrumentation, monitoring and inspection throughout the operating life and post closure is thus a pre-requisite for all mine waste facilities.

The inspection and monitoring parameters should therefore be formulated during the design, pre-deposition. However, as with the Waste Management Plan, the O&M Manual is a living document and will thus be subject to revision and amendment as the operation of the facility progresses. Revision will often be at the instigation of the independent expert as a result of the findings of the expert inspection. The contents of a typical O&M Manual are shown in Table 9.

**Table 9: Example of contents of Operating and Monitoring Manual to be included in the Waste Management Plan**

<table>
<thead>
<tr>
<th>Introduction</th>
<th>Recording protocols</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background/History</td>
<td>Inspection and Monitoring Routines</td>
</tr>
<tr>
<td>Facility Description</td>
<td></td>
</tr>
<tr>
<td>Facility classification</td>
<td></td>
</tr>
<tr>
<td>Mine Waste Disposal</td>
<td>Figures</td>
</tr>
<tr>
<td>Operating parameters</td>
<td>Appendices:</td>
</tr>
<tr>
<td>Operating rules</td>
<td>A Contact Details for Statutory/Regulatory Appointees</td>
</tr>
<tr>
<td>Hydrology</td>
<td>B Inspection &amp; Monitoring Record Sheets</td>
</tr>
<tr>
<td>Hydrological parameters</td>
<td>C Instrumentation Record Sheets</td>
</tr>
<tr>
<td>Reservoir operating rules</td>
<td>D Emergency Response Protocol</td>
</tr>
<tr>
<td>Seismology</td>
<td>E Permit</td>
</tr>
<tr>
<td>Operating parameters</td>
<td></td>
</tr>
<tr>
<td>Instrumentation</td>
<td></td>
</tr>
<tr>
<td>Description of equipment</td>
<td></td>
</tr>
<tr>
<td>Maintenance procedures</td>
<td></td>
</tr>
</tbody>
</table>

Comment [j10]: This is again project EIA, see EIA Directive.
The operator’s inspection regime can be broken down into the following:

- Operational inspections
- Performance monitoring
- Internal management
- Non-statutory Corporate audits

The general scope and organisation of each of these elements is described below, but it is noted that they will be site-specific and will need to be reviewed on a regular basis by management and during the regular independent expert inspections.

5.2.2 Operational inspections

The objective of inspections at the operational level is to ensure the day-to-day performance and function of all elements of the waste disposal and containment structures. The principal aim is to ensure that all facets of the operation retain their integrity and function in accordance with design requirements. It is also necessary that all waste disposal operations are being undertaken efficiently without undue risk to the operations, the operators, the environment or to third-parties. These inspections should be undertaken regularly and with additional monitoring visits to cover a range of frequencies in accordance with the sensitivity of the parameters of particular structures, i.e. a facility inspection may be as regular as each shift, while recording of some parameters may need to be undertaken at monthly intervals. The O&M Manual will thus specify a range of operating regimes, and the frequency and scope of each will need to be determined on a case-by-case basis to suit production or other site operations. A typical check list for the daily inspection of a tailings management facility and a waste rock dump is shown in Table 10.

<table>
<thead>
<tr>
<th>Tailings Management Facilities</th>
<th>Waste Rock Dumps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weather</td>
<td>Weather</td>
</tr>
<tr>
<td>Daily tonnages of waste produced and deposited</td>
<td>Daily tonnages of waste produced and deposited</td>
</tr>
<tr>
<td>Condition of embankments, roadways and other earthworks</td>
<td>Condition of deposited materials, signs of instability at toe, adverse settlements, cracks</td>
</tr>
<tr>
<td>Condition of tailings feed lines, pumps sumps, conveyors and deposition pipes</td>
<td>Condition of adjacent embankments, roadways and other earthworks</td>
</tr>
<tr>
<td>Tailings disposal management, deviations from approved procedures</td>
<td>Condition of feed lines, conveyors and deposition systems</td>
</tr>
<tr>
<td>Condition of water return pumps, sumps, valves and pipelines</td>
<td>Waste placement management, deviations from approved procedures</td>
</tr>
<tr>
<td>Condition of all spillways, inlet and outlet channels, storm diversion systems</td>
<td>Condition of storm diversion system, water return pumps, sumps, valves and pipelines</td>
</tr>
<tr>
<td>Reservoir and freeboard levels</td>
<td>Condition of all seepages, sumps and return pumps</td>
</tr>
<tr>
<td>Condition of all seepages, sumps and return pumps</td>
<td>Condition of adjacent operations such as excavations, tailings management facilities, water storage lagoons</td>
</tr>
<tr>
<td>Condition of adjacent operations such as excavations, stockpiles water storage lagoons</td>
<td>Adequacy of traffic routing and edge protection</td>
</tr>
<tr>
<td>Adequacy of traffic routing and edge protection</td>
<td>Safety concerns or other untoward events</td>
</tr>
<tr>
<td>Safety concerns or other untoward events</td>
<td>Other observations</td>
</tr>
<tr>
<td>Other observations</td>
<td></td>
</tr>
</tbody>
</table>

Typical operational inspection record sheets for the daily inspections are provided (see Appendix 2). On most sites an additional safety and security inspection may be required on a weekly basis where there are particular perimeter fencing or third-party security concerns or complaints.
The O&M Manual should include a detailed description of how an inspector is to undertake inspection of the various elements, what to observe and record and how to complete the inspection record sheet. In addition the O&M Manual should include specific operational instructions in the case of extreme weather conditions and untoward events, and provide both normal and emergency reporting routines. It is therefore necessary for the operator to ensure that the personnel performing such inspections have suitable knowledge such that the records are both accurate and reliable and fully understands the importance and implications of the information gathered. Such personnel should also be fully cognisant of the importance of the data records with respect to the ongoing safety and stability of the facility. Further, it is also necessary to ensure that the reporting system is fully functional, with an appropriate communication system established to ensure that suitably competent staff are available at all times to deal with untoward events and to carry out emergency procedures where required.

5.2.3 Performance monitoring
For each facility, particularly in the case of embankment dams and waste rock slopes, the design will require the regular measurement of key parameters. To enable these to be recorded regularly the design will include the installation of instrumentation to record the operational parameters either continuously or at specified intervals. The inspection routines for performance monitoring of some parameters may be combined with the daily inspection routines but, due to the nature of the parameter, others may be recorded weekly, monthly or in some instances such as hydrographic surveys, annually. The principal monitoring data as indicated in Figures 4b, 5b and 6b are shown in table 11 for a tailings management facility.

### Table 11: Regular Performance Monitoring Records for a TMF (can be adopted to apply to waste rock management facilities as well)

<table>
<thead>
<tr>
<th>Settlement/movement beacons</th>
<th>Climate data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seepage measurement volume and quality</td>
<td></td>
</tr>
<tr>
<td>Piezometric and piezometer levels</td>
<td></td>
</tr>
<tr>
<td>Reservoir gauge board condition and levels</td>
<td></td>
</tr>
<tr>
<td>Seismograph (normally not at site)</td>
<td></td>
</tr>
<tr>
<td>Tailings tonnage flow meters, spigot/cyclone performance</td>
<td></td>
</tr>
<tr>
<td>Waste density, hydrographic surveys</td>
<td></td>
</tr>
<tr>
<td>Effluent recycle flow meter</td>
<td></td>
</tr>
<tr>
<td>Waste disposal characteristics</td>
<td></td>
</tr>
<tr>
<td>Water borne emissions quality</td>
<td></td>
</tr>
<tr>
<td>Airborne emissions quality</td>
<td></td>
</tr>
<tr>
<td>River/surround surface water flows and quality</td>
<td></td>
</tr>
<tr>
<td>Groundwater levels and quality</td>
<td></td>
</tr>
</tbody>
</table>

The monitoring programme is intended to indicate changes and to provide early warning which could indicate potential operating, safety or environmental problems as well as providing the basis for assessment of overall performance and long-term condition. The scope, intervals and type of measurements should be adapted to the classification of the facility and to the specific situation at each. Monitoring and review should be carried out by personnel with documented competence.
Specific monitoring programmes need to be established for each waste facility, updated as required to suit data records or as a result of recommendations received in relation to independent inspections or by the authorities. Data such as piezometric levels or seepage volumes should be recorded, verified and plotted on a continuous basis such that trends can be established. It is generally helpful to include reservoir levels and rainfall on such data plots for comparative purposes. Routines for reporting quality control and data evaluation need to be established such that management overview is simplified. There is also the need for trigger values to be included in the O&M Manual, with both action and emergency levels indicated, together with associated reporting procedures. Evaluation should be carried out continuously by qualified personnel and should be overviewed regularly by management.

5.2.4 Internal management inspections
The aim of internal inspections undertaken by more senior personnel is to ensure that the regular monitoring and inspection routines are being undertaken appropriately, with nothing untoward unnoticed. The internally managed inspections should be accompanied by a review and sign-off of the daily inspection records. It would be expected that such management inspections be carried out at least on a monthly basis for high-risk facilities, and possibly even at weekly intervals depending on the situation. The internal inspections should cover all parts of the facility and, again, the methods to be adopted and the records kept should be fully described in the O&M Manual. The management inspection routine should facilitate the preparation of an annual report on the inspection and summary of the data records which would subsequently be provided to the inspecting engineer and form the basis of his inspection. Internal inspections/reviews should be carried out by personnel with documented competence in extractive waste, dam safety or environmental emissions as appropriate.

5.2.5 Corporate (strategic risk assessments) inspection
To be completed

Comment [j13]: Risk Assessment (RA) aspect is generally missing from this doc, although it shall serve the basis for inspection.